DRAFT

MONTANA'S

STATE WILDLIFE ACTION PLAN

MONTANA FISH, WILDLIFE & PARKS
2014

The mission of Montana Fish, Wildlife & Parks (FWP) is to provide for the stewardship of the fish, wildlife, parks, and recreational resources of Montana, while contributing to the quality of life for present and future generations. To carry out its mission, FWP strives to provide and support fiscally responsible programs that conserve, enhance, and protect Montana's 1) aquatic ecotypes, habitats, and species; 2) terrestrial ecotypes, habitats, and species; and 3) important cultural and recreational resources.

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EXECUTIVE SUMMARY

Montana's first State Wildlife Action Plan (SWAP), the Comprehensive Fish and Wildlife Conservation Strategy, was approved by the U.S. Fish and Wildlife Service (USFWS) in 2006. Since then, many conservation partners have used the plan to support their conservation work and to seek additional funding to continue their work. For Montana Fish, Wildlife & Parks (FWP), State Wildlife Grant (SWG) dollars have helped implement the strategy by supporting conservation efforts for many different species and habitats. This revision details implemented actions since 2006.

To date, Montana has received approximately $12.7 million through the SWG program in 12 years. However, continued Congressional support of the SWG program is questionable. Given the uncertain future of SWG, this SWAP revision was designed to do more than simply allocate SWG money. This SWAP identifies community types and areas in Montana that warrant conservation attention regardless if SWG is available to conduct the work. This means other funding sources may need to be explored and new partnerships forged. This SWAP is not meant to be an FWP plan, but a plan to guide conservation in Montana for the next 10 years.

One hundred and twenty-seven Species of Greatest Conservation Need (SGCN) are identified in this revision. Forty-seven of these are identified as being in most critical conservation need. In addition to identifying these species, their associated habitats were prioritized as Community Types of Greatest Conservation Need (CTGCN). Twelve terrestrial CTGCN were identified and streams, rivers, and several lakes and reservoirs were identified as aquatic CTGCN. More SGCN are found within these communities than any other types within the state. Therefore conservation efforts implemented in one CTGCN may benefit several species.

For successful implementation of this plan, it is critical that conservation actions be tracked so that success can be monitored, and adjustments made in priorities and actions if necessary. FWP will be employing methodologies, using USFWS' Tracking and Reporting Actions for the Conservation of Species (TRACS) and the Association of Fish and Wildlife Agencies' (AFWA) *Measuring the Effectiveness of State Wildlife Grants - Final Report* (AFWA 2011) for consistent reporting and measuring effectiveness.

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MISSION STATEMENT AND VISION FOR THE 21ST CENTURY

Montana Fish, Wildlife & Parks, through its employees and citizen Commission, provides for the stewardship of the fish, wildlife, parks and recreational resources of Montana while contributing to the quality of life for present and future generations.

Montana Fish, Wildlife & Parks will provide the leadership necessary to create a commitment in the hearts and minds of people to ensure that, in our second century, and in partnership with many others, we will sustain our diverse fish, wildlife and parks resources and the quality recreational opportunities that are essential to a high quality of life for Montanans and our guests (Montana Fish, Wildlife & Parks 2008).

Together, these statements lay the foundation for this State Fish and Wildlife Action Plan.

INTRODUCTION

In the early years of fish and wildlife management, the focus was placed on game animals and their habitats. This focus was, and continues to be, a result of hunters and anglers providing most of an agency's funding through purchasing hunting and fishing licenses. However, Montana Fish, Wildlife & Parks (FWP) is mandated to manage all wildlife (FWP 2011), including species not typically fished or hunted. Without reducing the attention focused on important game species, FWP needs to find a way to manage for the other species with the most critical needs.

To help address the conservation needs of these other wildlife species, Congress created the State Wildlife Grant (SWG) funding program in 2000. SWG funds are intended "... for the development and implementation of programs for the benefit of wildlife and their habitat, including species that are not hunted or fished." Congress stipulated that each state and territory that wished to participate in the SWG funding program must develop a State Wildlife Action Plan (SWAP) by October 1, 2005. All 56 states and territories submitted SWAPs by the deadline and made commitments to review and perhaps revise their SWAP at least every 10 years. Montana's first SWAP, the Comprehensive Fish and Wildlife Conservation Strategy (CFWCS), was approved by the U.S. Fish and Wildlife Service (USFWS) in January 2006.

FWP has received almost $12.7M from SWG apportionment since 2002. However, SWG funding has declined since 2010 and there may not be consistent support from Congress for the program in future years. Because of this, the SWAP revision was designed to identify species and their habitats that are in greatest need of conservation *despite* availability of SWG support in the future. The implication of this is that community types, priority species, and focal areas *still require attention*. Partnerships and other funding sources should be sought by FWP, and other agencies and organizations should be encouraged to focus their conservation efforts on these species, habitats, and areas. Even with SWG funding, the work identified in this plan far exceeds the funding amounts SWG would provide.

Though FWP was the lead agency responsible for reviewing and revising the CFWCS, collaboration with partners was necessary to ensure that the future of Montana's wildlife was secure. This SWAP identifies priority community types, species, and focal areas to aid not only FWP's decisions, but to assist other agencies and organizations in making decisions on where to focus their conservation efforts.

Every community type in Montana and all vertebrates, crayfish, and mussels were considered in this revision. Conservation actions were developed for the habitats, areas, and species considered to be in greatest conservation need, resulting in a document that provides conservation direction for the next 10 years in Montana.

ROAD MAP

Congress identified 8 required elements that each SWAP had to address for the 2005 submission. These elements have not been changed for the revisions and are still required to be addressed. In addition to these 8 required elements, the Association of Fish and Wildlife Agencies (AFWA) document, *Best Practices for State Wildlife Action Plans* (2012), was reviewed and some recommendations were incorporated into this SWAP.

This revision of Montana's CFWCS is considered a major revision by the USFWS. Several components of this revision were developed using completely different methodologies than the CFWCS and for others, more thorough descriptions are provided. What follows is an easy-to-read outline of the changes made in this SWAP revision for each of the 8 required elements. Please see the identified pages for detailed information.

1. Information on the distribution and abundance of species of wildlife, including low and declining populations, as the state fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the state's wildlife. *Pages 132-326*.

As with the CFWCS, the FWP and Montana Natural Heritage Program (MNHP) Point Observation Database provided observation data for all species. The FWP/MNHP co-managed online Field Guide was used to develop the individual species pages in this SWAP.

The method of estimating low and declining populations for this revision was much different than the CFWCS. Instead of using the formula developed for the CFWCS, the tested and accepted method that FWP and MNHP have been using for a decade to identify Species of Concern (SOC) was used in this revision (MNHP and FWP 2004). This method is a standardized ranking system to denote global and state status (Master et al. 2003).

2. Descriptions of locations and relative condition of key habitats and community types essential to conservation of species identified in (1). *Pages 22-131*.

A different approach was taken to describe habitats and community types for the SWAP revision. Most technical team members felt the community type descriptions were too broad and wanted to address habitat at a finer scale than what was in the CFWCS.

3. Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats. *Pages 22-326.*

Part of the process used to identify community types and focal areas for this SWAP, was to identify threats and impacts to species and habitats. The teams recommended specific conservation actions at the community type and species levels.

4. Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions. *Pages 22-326.*

AFWA's recommendation to use common language when describing conservation actions will be employed in tracking implementation of this SWAP (AFWA 2011). The technical teams and other internal and external experts were tasked with identifying and recommending very specific conservation actions for each general action, if applicable.

5. Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions. *Pages 327-328.*

Part of the recommended conservation actions that the technical teams et al. provided were monitoring recommendations for species and/or community types. These recommendations will be developed in more detail in the follow up Implementation Plan. This Implementation Plan will be reviewed and perhaps revised based on data collected and new information, after the first 3 years of implementation.

6. Descriptions of procedures to review the strategy at intervals not to exceed 10 years. *Pages 327-328.*

As mentioned earlier, this SWAP will be a living document. As data and new information are collected, this SWAP will be revised accordingly, but no more than once per year. The appropriate correspondence will be sent to USFWS when asking to approve the revision(s). FWP's forthcoming Implementation Plan, as well as new information from our partners, will aid in revising the SWAP.

According to current Congressional rules, this SWAP needs to be fully reviewed, and perhaps revised, by 2024. FWP expects that a major revision will be conducted then. The results of 10 years of data collection and analysis will help to modify species status, habitat condition, and threats or impacts to species or their habitats. As with this current revision, the next revision in 2024 will utilize the best available information and be able to direct Montana's conservation needs for another decade.

7. Plans for coordinating the development, implementation, review, and revision of the plan with federal, state, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats. *Pages 12-15*.

The Coordinator initially met with several staff of external agencies and organizations to inquire how they would like to be involved in the SWAP revision. The Coordinator then made recommendations to the Steering Committee chair as to which agencies and organizations should be on the technical team for the revision. The recommendations were based on levels of interest and expertise. Several external invitees responded and participated. Some team members were never able to attend a meeting and others had to discontinue participation. Funding, workload, and reduction in force all contributed to the levels of participation.

In addition to the formal technical team, other internal and external experts were consulted on every task the technical teams were asked to complete. In this way, additional cooperation and collaboration was achieved.

8. Broad public participation is an essential element of developing and implementing these plans, the projects that are carried out while these plans are developed, and the species in greatest need of conservation. *Pages 12-15*.

Members of agencies, organizations, and the general public were kept apprised of the revision via an introductory letter, webpage updates, press releases, and 4 newsletters.

PROGRESS REPORT: THE FIRST SEVEN YEARS

Shortly after the USFWS approved Montana's CFWCS in 2006, an FWP Steering Committee began developing a companion document to identify an implementation planning process to further refine priorities identified in the CFWCS. Because of limited funds, it was not possible to fund projects addressing every species or every community type in the CFWCS. The Implementation Plan identified a subset of species and community types on which to focus efforts for the first 6 years (FWP 2006a).

FWP received just over $8.1M in SWG funds since the 2006 CFWCS was approved. Although not everything in the Implementation Plan could be addressed with SWG funding, much work was done. FWP is able to track SWG funded work, but there are many other FWP projects funded through other means that may address conservation actions found in the CFWCS and Implementation Plan. These projects may fulfill CFWCS actions incidentally, and therefore may not be identified as CFWCS successes. In addition, any work other agencies and organizations may have conducted that have supported CFWCS actions is not tracked by FWP either. It is likely that many more actions have been addressed than FWP has the data for.

FWP intends to prudently track the implementation of the new SWAP and subsequent Implementation Plan with the help of USFWS' Wildlife Tracking and Reporting Actions for the Conservation of Species (TRACS) system implementation. In addition, the language describing strategies as outlined in the AFWA's *Measuring the Effectiveness of State Wildlife Grants – Final Report* (2011), will be used to help track the effectiveness of the SWAP.

COMMUNITY TYPES

The community types below were identified in the 2006 Implementation Plan as habitats needing focused conservation efforts. What follows is a summary of accomplishments since CFWCS approval.

Mountain Streams, Prairie Rivers, and Prairie Streams: FWP has not implemented specific over-arching programs to include the conservation of these community types. However, the day-to-day activities of FWP's Fisheries Division, watershed groups, private landowners, and numerous state and federal resource agency partners, address most of the needs and priorities identified in the 2006 CFWCS. While there is no reasonable way to succinctly identify the extent of these efforts, particularly those guided by collaborating partners, FWP's *Statewide Fisheries Management Plan, 2013 – 2018* (FWP 2013a) is a synthesis of FWP's programs and projects and projects that address management issues related to mountain streams, prairie rivers, and prairie streams. In addition, many conservation easements and fee title acquisitions consider water resources in the evaluations.

Aspens: FWP has secured multiple conservation easements and fee title acquisitions that include healthy or in need of restoration aspen habitat. Habitat acquisition projects such as the Little Doney Lake Project that secured over 2,500 acres of mixed conifer and aspen habitat adjacent to the Blackfoot Clearwater Wildlife Management Area (WMA) have benefited a number of high priority species to include common loons, trumpeter swans, grizzly bears, Canada lynx, and bull trout. As a high priority community type, biologists are actively looking to secure and/or restore aspen habitat when possible and to educate landowners on the importance of these habitats. FWP contributed to a University of Montana passerine and aspen research project in which the impacts of conifer removal on nesting success was quantified for use in future management decision making.

Riparian and Wetlands: FWP has secured multiple conservation easements and fee title acquisitions that include healthy or in need of restoration riparian and wetland habitat. FWP has particularly targeted habitats in critical floodplain zones, habitats currently vegetated by non-native and invasive plant species, and habitats experiencing natural cottonwood regeneration from recent flooding events. Land acquisitions such as the 700-acre island in the lower Yellowstone River, have increased protections for important wetland habitats that support a large diversity of species such as great blue herons, bald eagles, and spiny softshell turtles. The addition of numerous conservation easements along the Milk River in northeast Montana have added protections to private lands and increased the use of conservation minded land management practices. At the Milk River WMA, dense cattail marshes were burned to reduce cattail cover and increase open water. Future water level management will be adjusted to prevent cattail expansion and increase wetland productivity.

Recommendations on the use of setbacks as well as the maintenance of the natural hydrologic and ecologic function of wetlands is described in FWP's recently released *Fish and Wildlife*

Recommendations for Subdivision Development in Montana (FWP 2012). Biologists use these tools to encourage landowners to conserve wetland and riparian habitats. Private and government planning offices across Montana have been provided with this document as well; several are incorporating recommendations in the document.

Sagebrush and Grassland Complexes: FWP has secured multiple conservation easements and fee title acquisitions that include healthy or in need of restoration sagebrush and grassland habitat. FWP has particularly targeted lands in need of restoration and known to be critical nesting habitat for bird species such as the greater sage-grouse and Sprague's pipit. Efforts to restore native vegetation on existing FWP WMAs such as Cree Crossing and Hinsdale have provided nesting, winter roost, and secure migration habitat for a diversity of species.

Over 200 acres were seeded on the Moline Ranch conservation easement to ensure the remaining native sagebrush grassland breaks habitat provides cover and food resources for a diversity of species as well as connectivity to other native habitat pieces nearby.

SPECIES OF GREATEST CONSERVATION NEED

FWP and partners finished a number of planning tools that aim to conserve habitat for all of the species listed below. These efforts included the 2012 release of the *Fish and Wildlife Recommendations for Subdivision Development in Montana* (FWP 2012) and completion of the Crucial Areas Planning System (CAPS), a web-based mapping service. The subdivision recommendations provide advice to developers and homeowners on the use of setbacks as well as the maintenance of the natural hydrologic and ecologic function of wetlands. The recommendations also include sections specific to grasslands designed to reduce the loss of native prairie and maintain larger, intact sections of grassland habitat. In addition, this document provides recommendations to reduce conflicts with bears and other wildlife.

CAPS mapping service was aimed at future planning for a variety of development and conservation purposes so fish, wildlife, and recreational resources can be considered earlier in the development process. CAPS is part of a larger conservation effort that recognizes the importance of landscape scale management of species and habitats by fish and wildlife agencies. Agency biologists use these tools to encourage landowners, developers, and planners to conserve habitats critical to all Montana wildlife.

The species below were identified in the 2006 Implementation Plan as needing focused conservation efforts. What follows is a summary of accomplishments since CFWCS approval.

Northern Leopard Frog: Surveys throughout western Montana as part of the statewide diversity monitoring effort (2008-2010) revealed continued presence of northern leopard frogs across the range. However, populations continue to be threatened by habitat loss and invasive species, such as the American bullfrog, particularly in the western part of the state. Efforts are ongoing to secure habitat at northern leopard frog breeding sites and efforts to eradicate bullfrogs are underway in many locations by partners and private landowners.

The eastern Montana northern leopard frog populations were downlisted from the Montana SOC list from '*potentially at risk*' to '*apparently secure*' in 2009 based on statewide population information. The western population remains an SOC species, highly vulnerable to extirpation.

Burrowing Owl: Conservation easements and habitat restoration in native prairie habitats were conducted throughout much of the Montana burrowing owl range. Burrowing owl monitoring was conducted in combination with prairie dog and mountain plover surveys. Burrowing owls were also recorded as part of the 'Integrated Monitoring by Bird Conservation Region' project (2009-2013). This type of monitoring began in 2009 and will continue through 2014 and is an efficient way of adding observations for multiple species to Montana species databases. Monitoring and multi-species conservation efforts that cover all prairie and grassland birds resulted in a downgrading of the Montana SOC rank for the burrowing owl from '*at risk*' to '*potentially at risk*'.

Greater Sage-Grouse: FWPs use of conservation easements, grazing management agreements, and term leases to conserve and enhance native rangeland have benefited habitat for greater sage-grouse and other sagebrush associated wildlife across greater sage-grouse range. FWP continues to encourage conservation of important seasonal habitats in collaboration with the Natural Resources Conservation Service (NRCS), Bureau of Land Management (BLM), and private landowners using a core-area strategy. FWP has assisted with conservation efforts of the Sage-Grouse Initiative and is facilitating a Greater Sage-Grouse Habitat Conservation Advisory Council. This Council is comprised of citizens and constituents and will gather information, furnish advice, and provide recommendations on policies and actions to the Governor for a statewide greater sage-grouse strategy to preclude the need to list the greater sage-grouse under the Endangered Species Act (ESA). Among FWP's habitat conservation accomplishments is the enrollment of 198,000 acres of sagebrush conservation leases on priority private lands. FWP is leading a research effort in central Montana to quantify the impacts of different grazing systems on brood rearing and adult survival. The greater sage-grouse remains an '*at risk*' species on the Montana SOC list.

Mountain Plover: Conservation easements were secured and habitat restoration in native grassland habitats was conducted in some mountain plover habitats in Montana. Vast occupied prairie dog habitat was documented in 2009, and since plovers are strongly associated with prairie dog colonies, this indicated that mountain plover populations are likely stable in Montana. Surveys conducted in 2011 and 2012 did not support this assumption however, since few plovers were found. Incidental observations outside of survey areas indicated continued plover occupancy throughout their range in Montana. This information contributed to a 'not warranted' for ESA listing finding by the USFWS in 2011. FWP encourages carefully managed grazing that maintains a mosaic of native grassland habitats to benefit mountain plovers as well as other species. Mountain plover habitat and species conservation measures have been established in many areas by various state and federal agencies. Mountain plovers remain an '*at risk*' species on the Montana SOC list.

Trumpeter Swan: Efforts, such as those in the Blackfoot Valley, to reintroduce trumpeter swans have contributed not only to the restoration of the species but also to the public support for swan conservation. From 2005-2009, over 100 swans were released in the Blackfoot Valley in hopes that breeding pairs would eventually establish in the area and persist into the future. Five pairs established in the area in 2013 and 4 pairs nested, but only one pair successfully fledged young. Monitoring of these birds and their habitat will continue and possible future releases into the area will enhance restoration efforts. Discussions to restore trumpeter swans to places in southwest Montana are underway. FWP participation in The Greater Yellowstone Trumpeter Swan Working Group ensures Montana is involved in rangewide conservation of the species. A number of conservation easements and habitat restoration projects have been completed to provide habitat for swans. The Little Doney Lake Project secured over 2,500 acres of mixed conifer and aspen habitat adjacent to the Blackfoot Clearwater WMA. This species is considered '*potentially at risk*' on the Montana SOC list.

Arctic Grayling: Since 2006, the focus of Arctic grayling restoration efforts in Montana include the implementation of the Candidate Conservation Agreement with Assurances (CCAA) for Arctic Grayling in the upper Big Hole River (Big Hole CCAA), and restoration of grayling to the Ruby River and Elk Lake (in the Centennial Valley). The goal of the Big Hole CCAA program is to increase distribution, abundance and resiliency of Big Hole Arctic grayling by improving, protecting, and making accessible habitats important to all life stages of the species. With over 30 landowners and 150,000 acres enrolled in the program, the Big Hole CCAA is currently the largest such effort in the United States. The program has resulted in improved stream flows and riparian and channel condition in more than 80 miles of stream and subsequently, grayling have increased in distribution and abundance. "Replication" of the remaining native Arctic grayling populations remains a focus of conservation efforts, and introductions of Big Hole grayling to the Ruby River have resulted in a naturally reproducing population. More recently, Red Rock Lakes' grayling were introduced to Elk Lake, a nearby but isolated lake that historically maintained an adfluvial grayling population. FWP is currently preparing a revised Montana Arctic Grayling Restoration Plan. The plan will include overall grayling restoration objectives, and identify opportunities to expand the species range in Montana. This species is a Montana SOC and is considered to be '*at high risk*' of extirpation.

Blue Sucker: FWP has used standardized annual sampling efforts and targeted radio telemetry projects in the Missouri River (above and below Fort Peck Reservoir), Yellowstone River, and associated major tributaries to these rivers, to identify and characterize blue sucker home areas, spawning queues, migration paths, and spawn timing and locations. These projects have provided significant information on the status, life history strategies, and habitat use of blue suckers; however, spawning success and juvenile recruitment remains unclear in some areas. FWP has coordinated with the U.S. Bureau of Reclamation (BOR) in modeling and trial efforts to regulate spring water releases from impoundments on the Missouri River (above Fort Peck Reservoir) and the Marias River in a way that better mimics natural water regimes important for blue sucker spawning. Through 2013, trial releases have only occurred from Tiber Dam on the Marias River. Regulated flow releases and their impacts on water quality (e.g., temperature and turbidity) from Fort Peck Dam continue to be a concern, as are impediments to migration from dams on the Yellowstone River including the Intake and Cartersville diversions. This Montana SOC is considered both '*at risk*' and '*potentially at risk*' depending on the population.

Burbot: Though there are areas of concern for the species (e.g., Kootenai River, Yellowstone River), routine and targeted sampling of burbot continue to indicate a widespread distribution in their historic range, including periodically high abundances in some relatively cold and deep reservoirs. Owing to an apparent "stable status" in most waters, burbot specific research studies have not been a priority of the department between 2006 and 2013, an exception being a movement and habitat use study in the lower Yellowstone River. Angler exploitation is periodically monitored during water body specific creel surveys, and relative to their status and low harvest rates, current burbot exploitation has not been deemed a concern. FWP's understanding of burbot status and population characteristics continuously increases through existing sampling efforts, and where status concerns have been noted, e.g. Yellowstone River, additional studies are being considered. Burbot currently are not a Montana SOC, and are considered '*apparently secure*' in Montana's state rank.

Pallid Sturgeon: As an ESA listed endangered species, pallid sturgeon receive considerable attention from FWP and other resource agencies. While the USFWS oversees recovery efforts for this sturgeon, the program is collaboratively developed and implemented through the Upper Basin Pallid Sturgeon Workgroup, of which FWP is a full participating member. Research efforts have resulted in considerable knowledge gained concerning the ecology and status of Pallid Sturgeon in the Missouri (above and below Fort Peck) and Yellowstone Rivers in Montana. However, factors related to reservoir operations (particularly Fort Peck Reservoir) and passage (e.g., Intake Dam) in both drainages have not been addressed, and consequently sturgeon have not naturally recruited to the system in decades. Efforts to collect gametes from remaining wild adults (<120 individuals) has been very successful, and the subsequent introduction and high survival rate of resulting juvenile sturgeon ensures the persistence of the species in Montana for the foreseeable future. FWP has been closely involved in efforts to address passage concerns at Intake Dam, and is involved in planning efforts to create more natural flow regimes from reservoirs on the Missouri River above Fort Peck. Restoration of critical habitats, removal of barriers to migration, and minimizing the water quality impacts of reservoirs will continue to be a focus of FWP efforts for long-term pallid sturgeon recovery, which includes self-sustaining persistence. Pallid sturgeon are a Montana SOC and are considered to be '*at high risk*' of extirpation.

Westslope and Yellowstone Cutthroat Trout: Conservation and restoration of both subspecies of cutthroat trout continue to be a primary focus of general management activities and cutthroat specific programs in FWP Regions 1 - 5. Though the type of programs being implemented vary by location, generally efforts focus on habitat restoration; maintaining connectivity (e.g., removing barriers to movement) where the migratory life form is prevalent; reintroduction genetically "pure" cutthroat to historically occupied streams; "replicating" existing aboriginal populations; placement of barriers to non-native fish; and in some locations the removal of non-native trout species to reduce or eliminate competition and hybridization. Notable projects among the many efforts implemented over the last several years include the introduction of Westslope Cutthroat Trout (WCT) to 65 miles of stream in the Cherry Creek drainage (Madison River basin); an on-going effort to remove hybridized trout from headwater lakes in the South Fork of the Flathead River drainage which will ultimately result in the removal of primary threats to WCT in nearly 1,900 miles of stream; and reintroduction of Yellowstone Cutthroat Trout (YCT) to 25 miles of stream in the Sage Creek drainage (Shoshone River basin). These, and numerous other similar efforts, are developed and implemented by both management biologists and biologists specifically dedicated to cutthroat conservation efforts. On a statewide level, cutthroat trout conservation efforts are guided by the *Memorandum of Understanding and Conservation Agreement for Westslope and Yellowstone Cutthroat Trout in Montana* (FWP 2007), and the *Yellowstone Cutthroat Trout Conservation Strategy for Montana* (FWP 2013b). Both cutthroat species are on the Montana SOC list and are considered to be '*at risk*'.

Black-tailed Prairie Dog: FWP led efforts to identify the highest priority prairie dog complexes in Montana and explore opportunities for landowner incentive or stewardship programs to keep prairie dogs on these complexes. Statewide mapping was conducted in 2009, and later 5 of the largest prairie dog complexes were mapped and ground-truthed to inform ongoing conservation discussions. Discussions with partners such as the NRCS and the Western Association of Fish and Wildlife Agencies (WAFWA) are ongoing to identify funding sources for landowner incentives and to focus conservation in some of these large complexes.

FWP is a partner in development and testing of the sylvatic plague vaccine and is supporting the field efficacy trials underway in northeast Montana. The Montana Prairie Dog Working Group continues to meet annually to establish the highest priority conservation needs for the species across the state.

These above efforts and the data collected during surveys contributed to the 'not warranted' finding for the black-tailed prairie dog issued by the USFWS in 2009. This species is a Montana SOC species and is considered '*potentially at risk*'.

Grizzly Bear: Efforts to reduce human-caused mortality and proactively manage human-bear conflicts were carried out in all 3 grizzly bear recovery areas of Montana. Full time bear specialists worked across Montana to reduce conflicts by encouraging appropriate food and garbage storage and appropriate behavior while hunting or recreating in grizzly bear country. FWP participation in the Interagency Grizzly Bear Study Team and the ecosystem management teams ensures managers' concerns and conservation priorities are noted in the large scheme of conservation. A number of conservation easements or habitat restoration projects were conducted to provide habitat for grizzlies. This included the Little Doney Lake Project that secured over 2,500 acres of mixed conifer and aspen habitat adjacent to the Blackfoot Clearwater WMA. The grizzly bear is on the Montana SOC list and one population is considered to be '*at risk*' while the other populations are considered to be '*potentially at risk*'.

White-tailed Prairie Dog: Translocation of White-tailed Prairie Dogs (WTPD) in south central Montana was intended to re-establish the species at colonies from which they had been extirpated and to provide prey and habitat for a variety of other wildlife. Translocation was also intended to ensure maintenance of a viable population of WTPDs in Montana. FWP translocated 44 prairie dogs within Carbon County with these intentions in mind and to remove individuals at colonies under threat from highway re-alignment. WTPD conservation in Montana also benefitted from FWP's leadership of the Montana Prairie Dog Working Group as well as involvement with WAFWA efforts to conserve prairie dogs. This species is on the Montana SOC list and is considered to be '*at high risk*' of extirpation.

Spiny Softshell: FWP has conducted spiny softshell surveys on both the Yellowstone and Missouri Rivers over the past 6 years. Results of these surveys did not change the Montana SOC status from a species '*potentially at risk*'. The threats to this species remain the same, e.g., interrupted natural hydrologic regime by dams and reservoirs. FWP partnered with Montana State University to conduct a habitat use study of spiny softshells on the Missouri River in 2010. Telemetry data indicated turtles could move long distances, with some movements of over 25 river miles. Island nests were difficult to find but intensive nest searching confirmed that nests are most susceptible to predators and changing water levels. Habitat conservation efforts along both the Yellowstone and Missouri Rivers provide critical habitat to spiny softshells and will continue to be a focus of FWP river and shoreline conservation projects.

SPECIES GROUPS OF GREATEST INVENTORY NEED

The following species groups were targeted for inventory in the 2006 Implementation Plan as there were not enough data to determine their level of conservation need. This summary outlines the progress to fill those data gaps.

Bats: Acoustic bat monitoring has been conducted at dozens of FWP properties, including conservation easements and WMAs, to bolster bat presence data within Montana databases. FWP has partnered with MNHP and cavers in Montana to gather information on cave use by bats to include data on maternity colonies and hibernacula. Since 2010, 8 new hibernacula and dozens of new roost sites have been recorded. A network of over 50 long-term bat acoustic monitoring stations have been deployed across the state to gather baseline data on bat presence and activity levels.

Mussels: A 3-year SWG-funded study, completed in 2009, documented the occurrence and distribution of 3 native and 3 introduced mussel species in Montana and Idaho. Approximately 1,150 sites were sampled during the comprehensive inventory effort that included all major drainages in Montana. Five of 6 mussel species were found to have secure populations, and in some cases were expanding their distribution. A notable concern was a significant reduction in the range of the native western pearlshell mussel. Owing to this reduced distribution and continued threats, the pearlshell was identified as a species at risk and classified as a Montana SOC in 2008. The western pearlshell remains a focus of inventory efforts and experimental translocation projects in the Blackfoot drainage. This inventory project was summarized in a 2010 report titled *Freshwater Mussels in Montana: Comprehensive Results from 3 years of SWG funded Surveys* (Stagliano 2010).

Prairie Fish: Between 1999 and 2007, prairie fish assemblages were sampled at nearly 1,700 sites in FWP Regions 4 – 7. A majority of these sites were of small, warm water streams that had not been previously sampled and included sites in the 3 major eastern Montana drainages – the Little Missouri, Missouri, and Yellowstone Rivers. Thirty-two native and 21 introduced species were captured during the project, and of the 500,000 fish collected, 92% were native. These efforts were summarized by in a report titled *Synthesis of Montana Prairie Stream Fish Surveys, 1999 – 2007* (Bramblett 2008). The surveys and report provides a foundation for future monitoring efforts and the basis for additional work to conserve these communities. Beyond this project, FWP continues to complete annual monitoring efforts for all species in the larger rivers in eastern Montana, often related to pallid sturgeon recovery efforts. Finally, work has been recently completed documenting the importance of connectivity between large prairie rivers and their tributaries (Duncan et al. 2012).

Reptiles: Terrestrial reptile surveys were conducted during the 3-year Diversity Monitoring project (2008-2010). All south-facing rocky slopes were surveyed for reptiles within randomly selected sites across the state. Eight species were detected during Diversity Monitoring surveys and a number of range expansions were noted which included range expansions for all 3 Montana gartersnake species. Dozens of FWP properties including conservation easements and WMAs were also surveyed for reptiles as part of region-based monitoring. Data collected from all of this work filled many of the existing occupancy gaps for individual species. Spiny softshells were surveyed on both the Yellowstone and Missouri Rivers as part of specific monitoring or research projects.

Shorebirds: Shorebirds were recorded incidentally during the 2009-2010 Montana colonial waterbird surveys as well as during the multi-species 'Integrated Monitoring by Bird Conservation Region' project (2009-2013). Targeted shorebird surveys were not conducted, as monitoring of other species groups was identified as a higher priority.

Planning Structure and Approach

The first step the Plan Coordinator (Coordinator) took in the revision process was to send out a survey to FWP staff who either may have been involved in developing the CFWCS in some capacity, or might want to be involved in the revision. The survey was not exclusively a CFWCS/SWAP survey; it included questions for 2 other projects. The portion of the survey referencing the SWAP can be found in Appendix B. The survey was sent to 156 FWP employees and 126 (81%) responded.

The Coordinator followed up with face-to-face interviews with 63 survey recipients. In addition, 28 individuals from 13 agencies/organizations were met with to discuss their past involvement in the CFWCS development and how their agency or organization would like to be involved in the future development of the SWAP (Appendix C).

The survey and meetings helped lay the foundation for the SWAP development and involvement. Comments on how to engage FWP Regional Offices and staff were particularly helpful. Also very helpful was the consistent message from external agencies and organizations that they were very interested in being kept updated, although they were unsure how frequently they could actively participate given their available time and limited funding.

An internal Steering Committee was convened to guide the SWAP based on input and recommendations from newly formed Technical Teams. There were several committee and team member changes because of staff changes and retirements. These lists represent those that were serving on the committee and teams as of submission of the draft SWAP.

Steering Committee

Jeff Hagener	FWP Director
Ron Aasheim	Communication and Education Bureau Chief
Ken McDonald	Wildlife Administrator
Bruce Rich	Fisheries Administrator
Pat Flowers	Region 3 Supervisor
Tom Flowers	Region 6 Supervisor

Aquatic Technical Team

Leo Rosenthal	Region 1 Fisheries Biologist
Ladd Knotek	Region 2 Fisheries Biologist
Ron Spoon	Region 3 Fisheries Biologist
Grant Grisak	Region 4 Fisheries Biologist
Mike Ruggles	Region 5 Fisheries Biologist
Tyler Haddix	Region 6 Fisheries Biologist
Caleb Bollman	Region 7 Fisheries Biologist
Lee Nelson	Native Species Coordinator

Terrestrial Technical Team

Chris Hammond	Region 1 Wildlife Biologist
Kristi DuBois	Region 2 Wildlife Biologist
Claire Gower	Region 3 Wildlife Biologist
Brent Lonner	Region 4 Wildlife Biologist
Ashley Beyer	Region 5 Wildlife Biologist
Mark Sullivan	Region 6 Wildlife Manger
John Ensign	Region 7 Wildlife Manager
Lauri Hanauska-Brown	Nongame, Threatened, and Endangered Bureau Chief
Kristina Smucker	Wildlife Biologist (served as the liaison to the Montana Bird Conservation Partnership)

External Technical Team Members

Members of this group were invited to participate in all meetings where the above technical teams met, except for the initial meeting in October 2011. Because of staffing shortfalls, travel restrictions, and a variety of other factors, participation varied between members and meetings. When agencies/organizations could, they sent an alternate to participate in person or via a conference call.

Jake Chaffin	Bureau of Land Management
Gary Tabor	Center for Large Landscape Conservation
Bryce Maxell	Montana Natural Heritage Program
Pete Husby	Natural Resources Conservation Service
Brian Martin	The Nature Conservancy
Yvette Converse	U.S. Fish and Wildlife Service
Alan Dohmen	U.S. Forest Service

GUIDANCE DOCUMENT

In February 2012, FWP held a Structured Decision Making meeting to help the Steering Committee develop a guidance document for the SWAP revision. Invited to this meeting were Steering Committee members, Regional Supervisors, Administrators, Bureau Chiefs, and a few biologists.

A problem statement and objectives were finalized in March 2012 to guide what to include in the SWAP revision and what the SWAP must be used for (Appendix D).

PUBLIC INVOLVEMENT

Public involvement is critical to the SWAP development for Montana and will become even more important as FWP moves toward implementation. The internal technical team was queried about the best way to announce the SWAP revision to the public. They decided to inform the public of the SWAP revision via an informational letter that was sent to a mailing list that contained over 450 individuals, agencies, and organizations. Agencies and organizations were asked to forward the letter on to their entire staff, membership, or mailing lists. It is uncertain how many people the letter reached. Additional information was provided to the public via press releases, website updates, and 4 newsletters to the mailing list above. All of the correspondence included the Coordinator's contact information and people were encouraged to contact her if they wanted more information or wanted to know how to be more involved.

A 30-day public review was announced with a press release, an announcement in the newsletter and on the SWAP website, and letters or emails sent to the mailing list referenced above. The public was encouraged to view and/or download the SWAP online. During the draft review, XX people either from the general public or representing other agencies and organizations submitted comments concerning the draft.

IMPLEMENTATION

When fully implemented, this SWAP will be dynamic and will be revised based on the constant collection of data that will inform the ranking of CTGCN, SGCN, and Focal Areas. Changes to the SWAP will redirect priorities in terms of the most at-risk species and community types. Any SWAP revisions will be submitted to the USFWS annually for review and approval.

All of the priority SGCN and Tier I CTGCN in the SWAP are equal conservation priorities for Montana. In addition, no conservation action identified in this document is more or less important than any other, as successful conservation of the species and communities in greatest need will require addressing all of these concerns over time. In addition, singling out certain objectives reduces the flexibility of FWP and its partners to take advantage of conservation opportunities as they occur.

The biggest challenge to completely and successfully implement the SWAP is the lack of secure funding. In addition, the unstable nature of funding serves as a roadblock that could prevent FWP and its partners from committing to long-term projects. It is anticipated that this funding status will remain the same in the near future.

Because of the funding challenge, a new Implementation Plan, a companion document to the SWAP, will be developed immediately following SWAP approval by USFWS. Though all conservation actions identified in the SWAP are equal, the Implementation Plan will select a subset of CTGCN and SGCN that FWP intends to focus efforts on in the first 5 years. The Implementation Plan will be reviewed after the first 3 years of implementation.

METHODS

COMMUNITY TYPES OF GREATEST CONSERVATION NEED

The Aquatic Technical Team (ATT) and Terrestrial Technical Team (TTT) were asked to review community types identified in the CFWCS (FWP 2006b) and Ecological Systems developed by MNHP (MNHP 2013a) to help them identify and describe community types in the SWAP revision. The main consideration was defining the level of detail (e.g., scale) needed in a map layer that would best suit assessing community type conservation needs and identifying actions.

In addition to identifying community types, the Teams were asked to prioritize the types into 3 tiers based on level of conservation need. Both teams took different approaches on these tasks, as outlined below.

COMMUNITY TYPE TIER DEFINITIONS

Tier I. Greatest conservation need. There is a clear obligation to use resources to implement conservation actions that provide direct benefit to these community types.

Tier II: Moderate conservation need. Resources could be used to implement conservation actions that provide direct benefit to these community types.

Tier III: Lower conservation need. These areas may have existing adequate conservation and contribute to local conservation efforts, or provide buffers where they surround Tier I and Tier II community types.

AQUATIC COMMUNITY TYPES

The ATT decided to keep the aquatic community descriptions that were used in the CFWCS (FWP 2006b). Aquatic communities were described as *Intermountain Valley Rivers*, *Intermountain Valley Streams*, *Mixed Source Rivers*, *Mountain Streams*, *Prairie Rivers*, *Prairie Streams*, *Lowland Lakes*, *Lowland Reservoirs*, *Mountain Lakes*, and *Mountain Reservoirs*.

Most aquatic SGCN in Montana are found in streams and rivers, so it follows that most research, survey, inventory, and management actions are conducted in these habitats. Because of this, the ATT decided to identify all streams and rivers as Tier I community types, all lakes as Tier II, and all reservoirs as Tier III. However, some lakes and reservoirs were elevated to Tier I if they were critical to the life cycle of certain SGCN (Appendix F).

Existing species lists within agency databases were used to identify species associated with each community type. The aquatic association lists were created by intersecting Fish Distribution – Lakes and Streams GIS data (FWP 2013c) with Aquatic Habitat Classifications for Montana Lakes and Streams (aquatic community types) GIS data (FWP 2005) using a geoprocess in ArcMap. The resulting intersect tables were managed in a Microsoft Access database to create lists of species occurrences for each aquatic community type.

TERRESTRIAL COMMUNITY TYPES

The TTT agreed that community types defined in the 2006 CFWCS (MFWP 2006b) were too broad and should be described at a finer scale. They next reviewed the 3 levels of Ecological Systems (MNHP 2013a). They felt the first level (6 community types) was similar to the CFWCS and too broad to be useful in the SWAP, whereas the third level was too fine (60 community types) for developing conservation actions to be included in the SWAP. The TTT chose to use Level Two Ecological Systems, which identifies 21 community types, because it fit with the direction of the SWAP revision and provided the level of detail needed as identified by the TTT.

Several modifications were made to Level Two Ecological Systems for the purposes of display, analysis, and reporting. All 5 wetland community types (*Bog or Fen*, *Depressional Wetland*, *Forested Marsh*, *Herbaceous Marsh*, and *Wet Meadow*) were combined. At the request of technical team members, *Alpine Grassland* and *Alpine Sparse and Barren* were combined as were *Sagebrush Steppe* and *Sagebrush-dominated Shrubland*. In addition, 6 other landcover types were included and assessed as Ecological Systems. These were *Agriculture, Developed, Harvested Forest, Introduced Vegetation, Mining*, and *Recently Burned*. This resulted in 21 community types that were to be ranked (Figure 1).

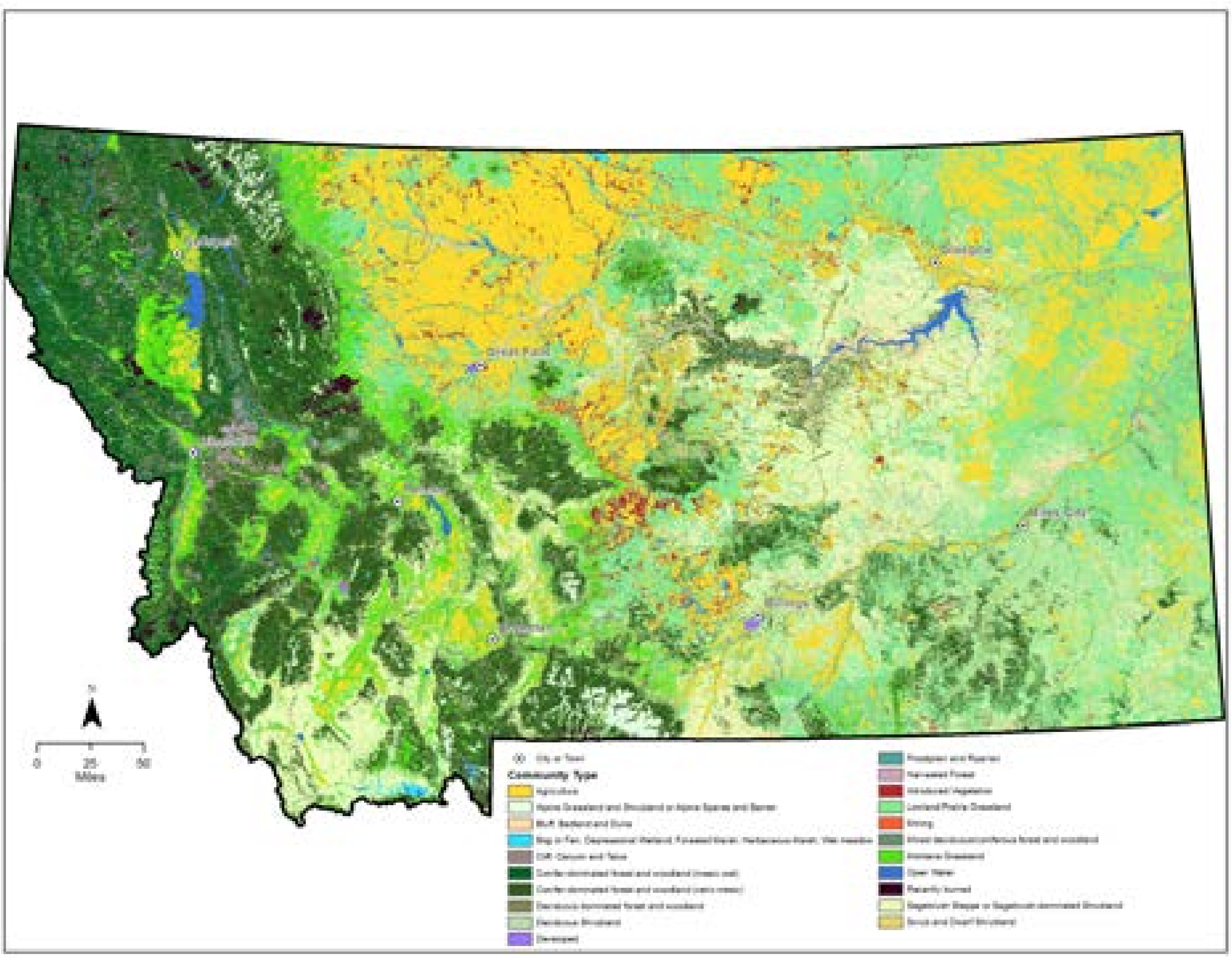

Figure 1. Community Types in Montana

Before ranking, the TTT suggested that the community types be further refined by geographical location. It was clear that each community type was not equally valuable or equally threatened across its entire distribution in Montana. For example, grasslands in the eastern part of the state support many more SGCN and are affected by different threats than grasslands in the western part of the state. The TTT wanted the ability to identify these differences. Omernik's Level III Ecoregions (Environmental Protection Agency 2013; Figure 2) were intersected using a geoprocess in ArcGIS 10.1 with Ecoregions as a way to identify and describe the geographical differences in community type. Seven Ecoregions were used to separate the 21 community types identified. Because not every community type was found in all 7 Ecoregions, there were a total of 126 different community types to assess and rank for the entire state.

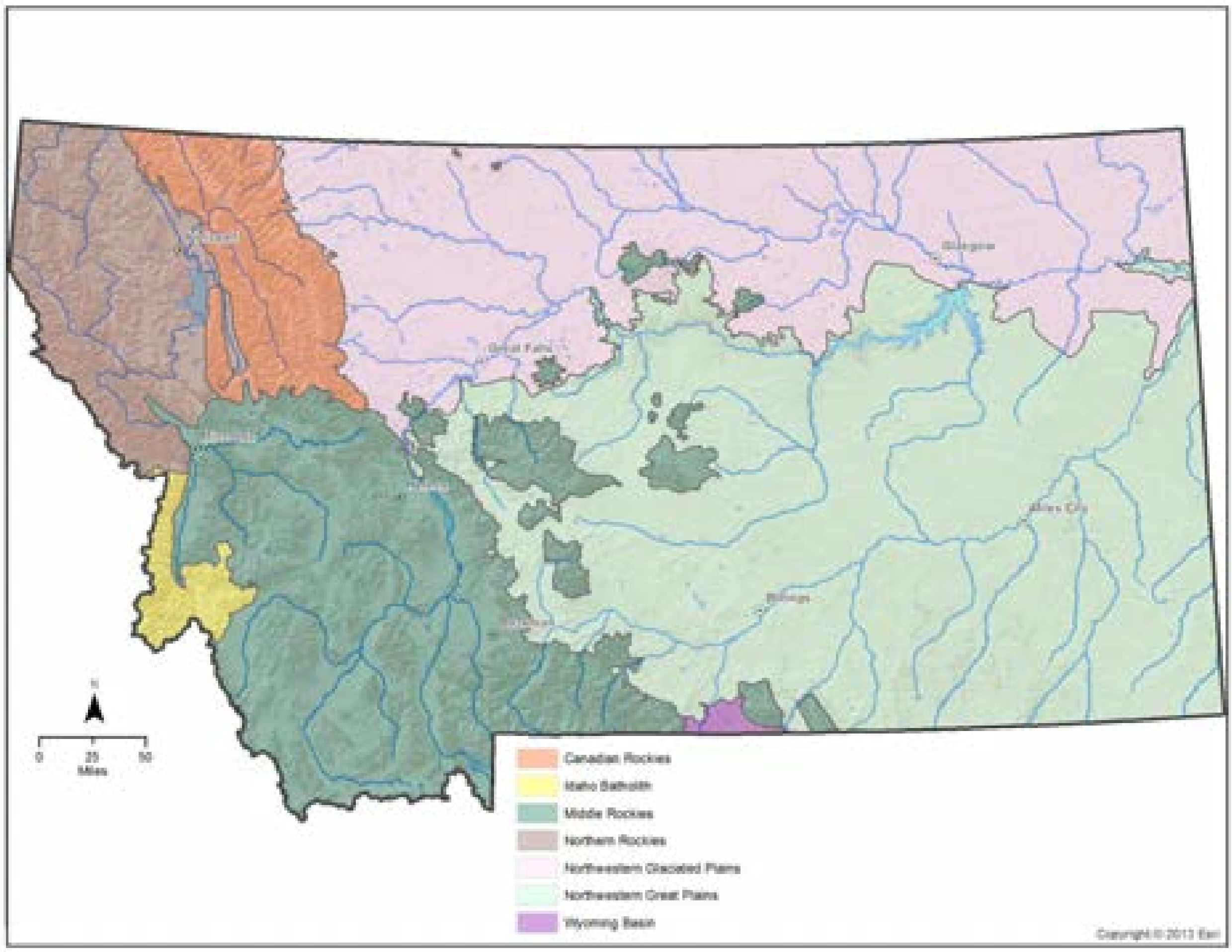

Figure 2. Omernik's Level III Ecoregions

The following rules were followed to assign each community type to Tier I, II, or III. See Appendix E for the full list of tiered community types.

Tier I.

TIa. *Floodplain and Riparian*, all *Wetland* types, and *Open Water* in every Ecoregion because of the biodiversity found in wet landscapes and the importance of water during different life cycles of species.

TIb. Any community type that was associated with at least 66.7% of all SGCN within an Ecoregion.

Tier II.

TIIa. Any community type that was associated with at least 10%, but less than 66.7%, of all SGCN within an Ecoregion.

Tier III.

TIIIa. Any community type that was associated with less than 10% of all SGCN within an Ecoregion.

TIIIb. *Developed* because of the permanent modification of the habitat and the understanding that no SGCN naturally depends on this community type.

Exceptions – These exceptions do not apply to the following community types which are always either Tier I or Tier III: *Floodplain and Riparian*, all *Wetlands*, *Open Water*, and *Developed*.

Ea. Any community type that had a landcover of 0.5% < 1% within an Ecoregion dropped one Tier, but no lower than Tier II.

Eb. Any community type with less than 0.5% landcover in an Ecoregion was considered Tier III.

Ec. If a community type within an Ecoregion had at least 1% landcover, it could be bumped up one tier if the majority of members on the technical team believed it should.

Existing species lists within agency databases were used to identify species associated with each community type. Species associations with ecological community types were identified by MNHP and FWP biologists, ecologists, and species experts during 2010-2012. Each species was assigned as being '*Commonly*' or '*Occasionally Associated*' with ecological community types based on a review of distribution records, species known range, expert knowledge and the Level 2 Montana Land Cover Framework (MNHP 2013b; Vance 2010) GIS data. Only '*Commonly Associated*' community type-species associations were used to identify associations for the SWAP. These species-community type associations were managed in a Microsoft Access database to create a list of expected species occurrences for each terrestrial community type.

SPECIES OF GREATEST CONSERVATION NEED

The technical teams adopted the protocol and process that FWP and MNHP have been using for a decade to identify SOC (MNHP and FWP 2004). This method is a standardized ranking system to denote Global and State ranks (Master et al. 2003).

Before adopting the SOC list as the SWAP SGCN list, the technical teams first reviewed a list of all native vertebrates, mussels, and crayfish found in Montana and made recommendations to MNHP regarding which species should be reviewed for inclusion or removal from the SOC list. These recommendations were largely based on new information learned since a species was last reviewed.

Though the entire SOC list was adopted as the SGCN list, conservation actions were developed only for species that were assigned a State Rank of S1 (high risk) or S2 (at risk). This decision was made to ensure that limited resources were used to first focus on the most at risk species. While these species were chosen to focus conservation efforts, it is not implied that the other SGCN (i.e., species with a State Rank of S3) are excluded.

MNHP and FWP biologists review the SOC list annually in consultation with representatives of the Montana Chapter of The Wildlife Society, the Montana Chapter of the American Fisheries Society, and other experts. In addition, individual species are reviewed as they are petitioned for inclusion on or removal from the list. Because of the frequency of reviews, the SOC list is a dynamic list. If changes are made to the SOC list, the SGCN list will change as well. FWP will submit a letter to USFWS requesting approval of the change(s) no more than once per year.

During the initial planning stages, the FWP Steering Committee decided that the SWAP would not include Montana's invertebrate species. With nearly 1,000 species of aquatic invertebrates in the state, and at least twice that number of terrestrial invertebrates, it is impossible to develop a plan to comprehensively address invertebrate conservation in Montana. However, mussels and crayfish were included because they fall under FWP jurisdiction and management per Montana Statutes, Title 87 (FWP 2011).

SPECIES OF GREATEST INVENTORY NEED

In 2013, MNHP began maintaining another list in addition to the SOC list. This list identified species of highest inventory need because they either lacked baseline surveys or they had outdated surveys. This SWAP recognizes all SGCN on the MNHP highest inventory need list as being Species of Greatest Inventory Need (SGIN). In addition, Potential Species of Concern (PSOC) on this MNHP list are also considered to be SGIN in this SWAP. These species being data poor as well as potentially at risk, justifies their need to be targeted for survey and inventory.

CONSERVATION ACTIONS

There are 2 main components to this SWAP revision: Community Types of Greatest Conservation Need (CTGCN) and Species of Greatest Conservation Need (SGCN). While Focal Areas are identified (Appendices J-M), and will help direct conservation efforts for agencies and organizations, they are not the main objective of the SWAP.

While SWAPs generally have been species-centric, this revision is taking a different approach. Conservation actions have been developed for some SGCN, but the focus of this revision is to approach conservation by promoting actions that can be applied at a larger scale – community types. It is worth reiterating that SWAPs are severely under-funded for all the work that is recommended. This broad approach will focus efforts within CTGCN, so funding dollars can be used to address many species within one project. Approaching projects in this manner will provide benefits to several species at once rather than one species at a time.

Only CTGCN (i.e., Tier I) are described in the body of this SWAP. These community types guide our attention to the areas that offer the best opportunity to conserve Montana's SGCN. Appendix E includes the tiered list of all community types including those not addressed in the body of this plan.

The technical teams identified current impacts and future threats to CTGCN and SGCN, and then developed conservation actions to address and mitigate those impacts and threats. These actions were either new ideas brought forth by the technical teams or taken from the CFWCS (FWP 2006b) and other existing plans. Conservation actions were developed only for CTGCN and SGCN (State Rank S1 and S2; see Species of Greatest Conservation Need above).

The technical teams have made every effort to use existing management plans to describe the conservation actions for species and community types in the SWAP update. In this way many different plans come together in order to facilitate collaboration.

RESULTS

All of the information in this section is taken directly from the CFWCS (FWP 2006b), Montana Field Guide (MNHP 2013a; MNHP and FWP 2013a), the SOC list (MNHP and FWP 2013b), and recommendations from the SWAP Technical Teams (personal communications). Any additional citations are identified within each community type or species descriptions.

COMMUNITY TYPES OF GREATEST CONSERVATION NEED

Conservation at the community type level provides the potential to leverage conservation resources to benefit large numbers of species. Community types also provide a way to associate numerous species through common habitat requirements. These communities often face similar conservation concerns that can be addressed simultaneously. The community types in this section have been identified as Tier I CTGCN, and efforts should be made to address the conservation actions identified for these community types across an Ecoregion regardless if they fall within a Focal Area (Appendices J-M). However, the Focal Areas identify geographic areas that offer some of the greatest potential to conserve CTGCN and SGCN.

AQUATIC COMMUNITY TYPES AND CONSERVATION ACTIONS

The ATT identified all streams and rivers as Tier I community types. In addition, 54 lakes and 9 reservoirs were identified as Tier I community types because of their importance in part or all of the life cycle of certain SGCN.

All of the aquatic community types in Montana have similar threats, though the magnitude and urgency of those threats may be different. Likewise, the conservation actions addressing those threats may be different depending on the community type and the geographic area. Threats, impacts and actions are outlined by individual aquatic CTGCN in the following pages. However, a several conservation actions have been developed for all aquatic CTGCN and are identified here.

Broad Actions

Collaboration and outreach

- Actively participate with private landowners, watershed groups, non-governmental organizations, state and federal government agencies, local governments, tribes, landtrusts, conservation districts, and other interested parties to: ensure work plans consider wildlife habitat needs during planning and implementation; ensure effective cooperation; work collaboratively; and promote SGCN and habitat conservation while maintaining private land management objectives.
- Conduct outreach to landowners to implement land management practices that benefit SGCN.
- Continue "angler interviews" to educate anglers on proper fish identification and release methods.

- Continue kids fishing days and "Hooked on Fishing, Not on Drugs" elementary school outreach and education program.
- Continue to disseminate information to the public through annual meetings and press releases.
- Continue to work with FWP lands acquisition personnel.
- Educate individuals on the importance of habitat conservation through one-on-one contacts, attending public meetings, and through various media outlets.
- Educate the public and land managers about the high values of CTGCN and how to better manage these habitats in ways that balance their management objectives with the conservation actions outlined in this SWAP.
- Emphasize native vegetative species growth that is beneficial to SGCN seasonally or year-round.
- Identify programs and funding sources that can provide incentives for landowners to conserve, manage, and/or restore habitat for SGCN; potentially provide appropriate incentives to landowners that cooperate in habitat restoration activities.
- Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004), whirling disease, and other waterborne diseases during research, monitoring, management, or recreational activities.
- Incorporate other agencies' Best Management Practices (BMP) when implementing actions outlined in this SWAP.
- Keep the FWP Regional Citizen Advisory Councils informed of SGCN conservation efforts.
- Participate in educational programs to disseminate data and foster advocacy for fisheries resources.
- Provide decision makers with data about pollution impacts on SGCN to help them set water quality standards.
- To avoid spread of aquatic invasive species, follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (2002) and updates or revisions to the plan.
- Work closely with landowners and various government agencies on species restoration plans.
- Work with willing landowners and land management agencies on habitat projects using Habitat Montana (FWP 1994), SWG, and other funding sources.
- Work with local communities to maintain family fishing ponds and increase signage to promote native species and habitat protection.

<u>Conservation areas</u>

- Continue to utilize Habitat Montana (FWP 1994) to review potential acquisitions.
- Encourage and support opportunities such as land acquisitions or perpetual easements to conserve CTGCN.
- Prioritize conservation easements and acquisitions adjacent to current conservation investments in order to create contiguous protected habitat that provide habitat linkages across large landscapes.
- When appropriate, designate an area as an important conservation area, natural area, or special botanical area due to the unique qualities and importance of the community type.

- Work with willing landowners, agencies, and organizations to purchase land or acquire conservation easements that support SGCN to: provide access to resources, prevent further habitat fragmentation, and preserve natural habitat function.
-

Habitat/species work
- Collect trend data and survey SGCN.
- Encourage erosion control through soil management techniques.
- Gather data with respect to SGIN.
- Encourage and support habitat improvement projects within CTGCN.

Planning and review
- Assist in the review and provide recommendations for habitat work proposals completed by land management agencies that may affect CTGCN.
- Consider SGCN and their habitats during development of management plans for WMAs, Fishing Access Sites (FAS), and state parks.
- Develop management plans for CTGCN to benefit SGCN.
- Follow management direction outlined in the Montana Statewide Fisheries Management Plan (FWP 2013a).
- Review and provide recommendations for federal land management planning processes (e.g., roads, timber, grazing) in CTGCN that may impact the community type and associated SGCN.
- Review proposed private ponds, 310 and 124 projects, and management plans to assure threats to fisheries are minimized.
- Work with other agencies, organizations, and interested parties to promote habitat work to benefit SGCN.

Training and technical assistance
- Provide technical assistance to local landowners, conservation districts, and federal and state agencies as it pertains to the aquatic habitat, function, and fish assemblage.
- Provide technical assistance as needed on issues related to SGCN and their habitats.
- Provide technical assistance to landowners who are considering various conservation easement options on their properties that would benefit the conservation priorities outlined in the SWAP.

Statewide Impacts and Threats

Developments/Subdivisions
- Encourage counties and communities to use the FWP subdivision recommendations.
- Review and comment on subdivision requests that have the potential to impact SGCN and make recommendations based on FWP's *Fish and Wildlife Recommendations for Subdivision Development* (FWP 2012).
- When bridges are installed or replaced, use larger bridge spans to avoid or decrease floodplain constrictions (as opposed to small bridges with filled approaches).

Energy Exploration and Extraction – Including coal, oil, gas, Coal Bed Methane, and bentonite exploration and extraction; construction of pipelines.

- Incorporate recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (In prep) for energy development projects
- Review and comment on energy related developments on public lands to minimize negative impacts to SGCN and their habitats

Wind Energy

- Incorporate recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep) for energy development projects
- Review and comment on energy related developments on public lands to minimize negative impacts to SGCN and their habitats

Intermountain Valley Rivers and Streams

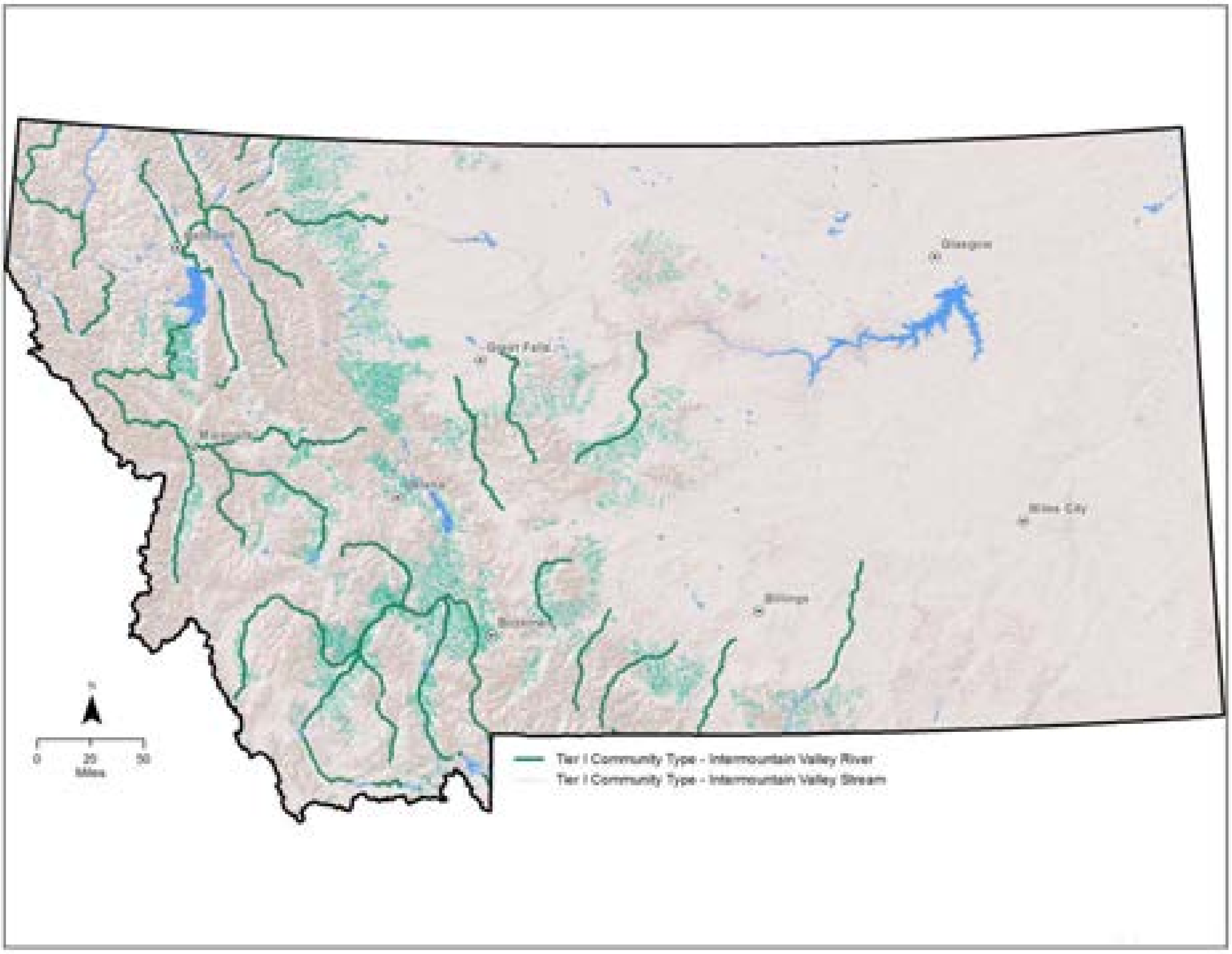

Figure 3. Distribution of Intermountain Valley Rivers and Streams

Intermountain Valley Rivers **1,483 miles**

These low to moderate elevation rivers originate in the Canadian Rockies, Middle Rockies, and Northern Rockies Ecoregions, and continue into intermountain valleys or the eastern prairies. The lower reaches of these rivers are confined to open valleys. They have permanent flow, but several are regulated by impoundments (e.g., Madison, Flathead, Kootenai, Big Horn).

The upland areas are typically comprised of coniferous forest, grassland, and cottonwood-willow vegetation communities. Typical fish assemblages include cold water species including threatened bull trout, endangered white sturgeon, Arctic grayling, cutthroat trout, and various dace and sculpin. Sauger are found in the lower reaches of the Judith River.

Disruption of natural water flow, such as diversions, flood control, hydroelectric dams, bank armoring, and irrigation withdrawals, have significantly impacted this community type. Below dams, reaches are impacted by altered water temperatures, introduced fish, unnatural water level fluctuations, and changes in sediment and nutrient transport.

Associated SGCN

Fish
Arctic Grayling
Blue Sucker
Bull Trout
Columbia River Redband Trout
Northern Redbelly Dace
Pygmy Whitefish
Sauger
Spoonhead Sculpin
Sturgeon Chub
Torrent Sculpin
Westslope Cutthroat Trout
White Sturgeon
Yellowstone Cutthroat Trout

Mollusk
Western Pearlshell

Intermountain Valley Streams **5,041 miles**

This community type is found in mountainous, moderate-to-high elevation (3,900-8,200 feet), forested, moderately confined-channel streams of the Canadian Rockies, Middle Rockies, and Northern Rockies Ecoregions. The stream sizes are generally small-to-medium (1^{st}-3^{rd} order, average wetted width is 10-16 feet). The average summer temperature is <60°F. While there is permanent flow in these streams, there is strong seasonal variability due to melting snowpack. These streams are the transition from the headwater or forested stream communities to the lower foothills and intermontane rivers. This community type provides important habitat for Montana's native cutthroat trout populations. The substrate is dominated by cobbles and boulders, with gravel in the short pools. The geomorphology is normally a riffle/run/pool configuration. Large woody debris often provides channel material.

Disruption of natural water flow, such as diversions, flood control, hydroelectric dams, bank armoring, and irrigation withdrawals, have negatively impacted this community type the most (Winston et al. 1991). Below dams, reaches are impacted by altered water temperatures, introduced fish, unnatural water level fluctuations, and changes in sediment and nutrient transport.

Associated SGCN

Fish
Arctic Grayling
Bull Trout
Northern Redbelly Dace
Sauger
Westslope Cutthroat Trout
Yellowstone Cutthroat Trout

Intermountain Valley Rivers and Streams Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Water management: Agriculture Altered temperature regime Chronic dewatering Interbasin transfers Reservoir management	Water management: Agriculture Altered temperature regime Chronic dewatering Interbasin transfers Reservoir management	Identify dam operations conducive to best quality habitat protection in both reservoirs and rivers Improve and maintain natural stream form and function by ensuring riparian resiliency through land use management and improving instream flows to accurately reflect species needs Investigate/pursue methods to reduce effects of dewatering and entrainment Work with appropriate agencies (i.e., U.S. Army Corps of Engineers (USACOE), U.S. Forest Service (USFS), USFWS, Department of Natural Resources and Conservation (DNRC)) to maintain quality aquatic habitats and to mitigate impacts and threats to fisheries resources
Connectivity: Downstream transport: little or no replacement of large woody debris Fish barriers (e.g., culverts, dams, diversions)	Connectivity: Downstream transport: little or no replacement of large woody debris Fish barriers (e.g., culverts, dams, diversions) High hydropower dam potential	Restore connectivity by identifying and removing migration barriers, native fish corridors, and/or by installing fish ladders or other fish passage structures Restore migration routes where tributary mouths have been perched due to lack of flushing flows
Poor grazing practices Poor range management practices	Poor grazing practices Poor range management practices	Support management practices that maintain riparian vegetation and streambank and channel stability in excellent condition Support government and private conservation activities that encourage and support sustainable land management practices

Current Impacts	Future Threats	Conservation Actions
		Work with willing landowners to implement land management practices beneficial to SGCN or overall community type
Riparian management: Impaired habitat and degradation Instream habitat degradation Natural sedimentation Timber harvest	Riparian management: Impaired habitat and degradation Instream habitat degradation Natural sedimentation Timber harvest	Conduct large woody debris projects and channel restoration where needed Potentially provide appropriate incentives to landowners that cooperate in habitat restoration activities to encourage their continued participation Provide technical assistance to local landowners and conservation districts as it pertains to the aquatic habitat, function, and fish assemblage Restore habitat integrity: riparian revegetation when needed Work with private landowners, land management agencies, conservation districts, watershed groups, and other interested parties to conserve and promote healthy riparian habitats beneficial to SGCN and overall community type
Housing development (residential and urban) Railroad Road encroachment on stream corridors	Housing development (residential and urban) Railroad Road encroachment on stream corridors	Provide expertise for prospective stream restoration equipment contractors and help local conservation district with natural resource protection training for real estate contractors
Mining contamination and other impacts	Mining contamination and other impacts	Provide decision makers with data on the impacts and threats to SGCN Work with the USFS and the Department of Environmental Quality in the development of mine clean-up plans and metals reduction (particularly Hg)

Current Impacts	**Future Threats**	**Conservation Actions**
Angling pressure Illegal harvest	Angling pressure Illegal harvest	Continue to make recommendations for harvest regulations
Illegal introductions of non-native fish species Non-native species competition, predation, and hybridization	Barrier failure Expansion of non-native fish species Illegal introductions of non-native fish species Non-native species competition, predation, and hybridization	Construction and monitoring of fish passage barriers to reduce non-native species movement Eliminate competing fish species by piscicides, trapping, or electrofishing Install fish screens
Nuisance blooms of *Didymosphenia geminate*	Nuisance blooms of *Didymosphenia geminate*	Follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (2002) and updates or revisions to the plan
Extirpated or low populations of SGCN	Extirpated or low populations of SGCN	Conduct research to answer necessary questions for key species (e.g. determine habitat use and spawning location) Continue or establish baseline data collection protocol to monitor SGCN relative abundance, distribution, and size structure Continue to collect and analyze biological and physical data through the watershed to evaluate success of habitat restoration and improvement Continue to collect information that helps us better understand the life histories, habitat requirements, and impacts on SGCN Continue to work with landowners and land managers to secure conservation servitudes in areas key to SGCN restoration Develop and work toward species restoration goals

Current Impacts	Future Threats	Conservation Actions
		Manage harvest regulations to support low or declining populations Restore degraded habitat in spawning, rearing, and maturation habitats Work with private landowners and land management agencies to identify high value lands adjacent to habitat important for SGCN for hydropower mitigation Work with counties to update and improve floodplain management to protect habitat important to SGCN
	Climate change	Continue to evaluate current climate science models and recommended actions Continue or establish protocols to monitor thermal data, water flow, and conduct insect surveys Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan Final. 148 pp.

Winston, M. R., C. M. Taylor, and J. Pigg. 1991. Upstream extirpation of four minnow species due to damming of a prairie stream. Transactions of the American Fisheries Society 120:98–105.

Mixed Systems **916 miles**

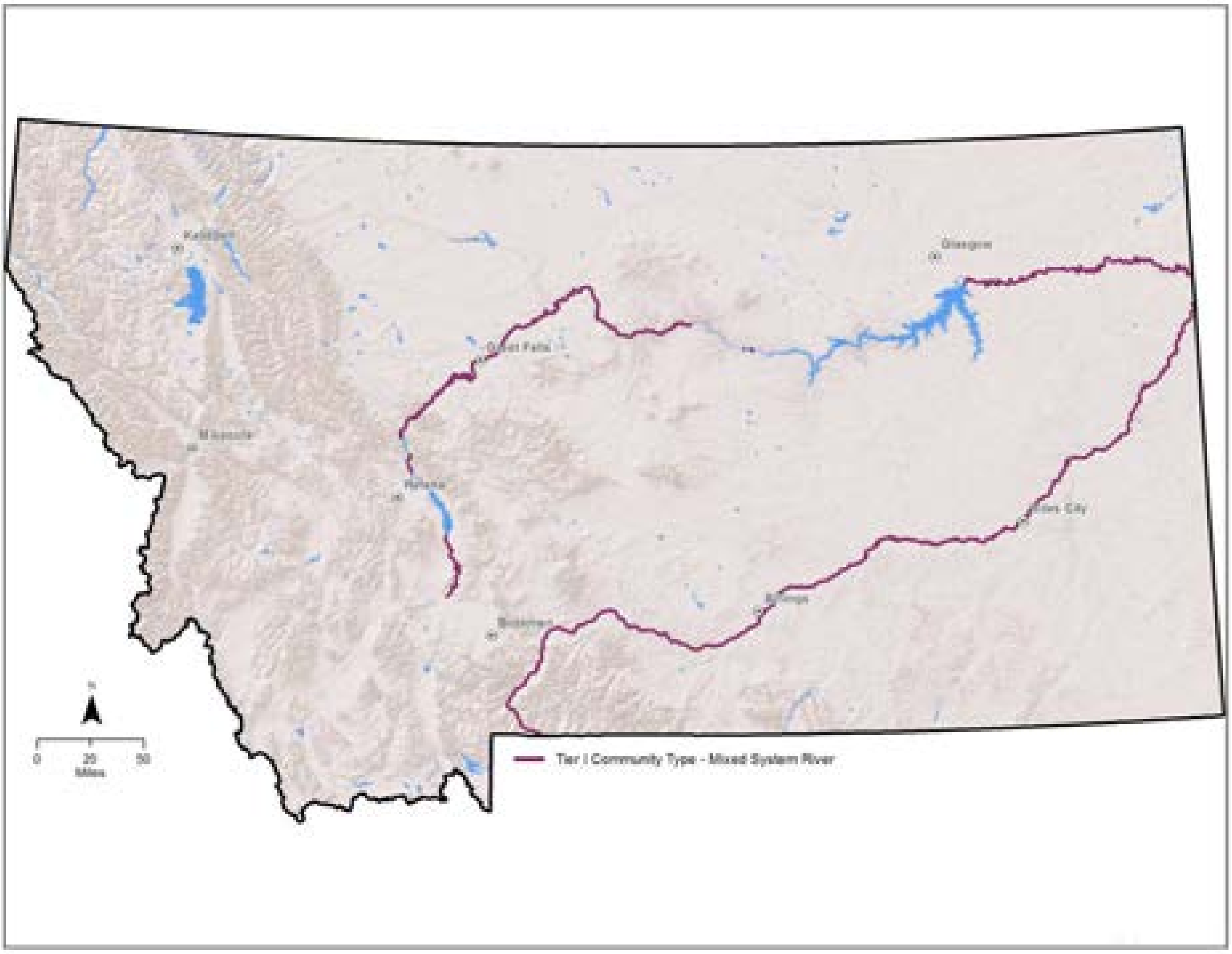

Figure 4. Distribution of Mixed Systems

These systems are characterized by lower gradient runs and riffles with small cobble, gravel, and sands. The upland habitat type is typically cottonwood valley bottoms.

Headwater reaches of this community type transition from cold water trout species to cool and warm water species in middle and lower reaches. This system is considered critical habitat for endangered pallid sturgeon, and a large number of SGCN including sauger, blue sucker, shortnose gar, paddlefish, and sicklefin chub.

Disruption of natural water flow, such as diversions, flood control, hydroelectric dams, bank armoring, and irrigation withdrawals, have significantly impacted this community type. Below dams, reaches are impacted by altered water temperatures, introduced fish, unnatural water level fluctuations, and changes in sediment and nutrient transport. Specifically, the Missouri River is significantly impacted by upper Missouri Reservoir dams and the Fort Peck dam. Likewise, tributary impoundments partially impact the lower Yellowstone, and low-head dams on the Yellowstone mainstem impact the movement of many SGCN.

Associated SGCN

Fish

Blue Sucker
Iowa Darter
Northern Redbelly Dace
Paddlefish
Pallid Sturgeon
Sauger
Shortnose Gar
Sicklefin Chub
Sturgeon Chub
Yellowstone Cutthroat Trout

Mixed Systems Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Water management: Altered temperature regime Chronic dewatering Instream flow water rights Water withdrawals	Water management: Altered temperature regime Dewatering Instream flow water rights Water withdrawals	Improve and maintain natural stream form and function by ensuring riparian resiliency through land use management and improving instream flows to accurately reflect species needs Investigate/pursue methods to reduce effects of dewatering and entrainment Work with appropriate agencies (i.e., USACOE, USFS, USFWS, DNRC) to maintain quality aquatic habitats and to mitigate impacts and threats to fisheries resources
Connectivity: Fish barriers (e.g., culverts, dams, diversions)	Connectivity: Fish barriers (e.g., culverts, dams, diversions)	Restore connectivity by identifying and removing migration barriers, native fish corridors, and/or by installing fish ladders or other fish passage structures
Poor grazing practices	Poor grazing practices	Work with landowners to implement land management practices beneficial to SGCN or overall community type
Riparian management	Riparian management: Fuel reduction	Continue to work with willing landowners to develop channel migration easements Potentially provide appropriate incentives to landowners that cooperate in habitat restoration activities to encourage their continued participation Provide technical assistance to local landowners and conservation districts as it pertains to the aquatic habitat, function, and fish assemblage Restore habitat integrity: riparian revegetation when needed

Current Impacts	**Future Threats**	**Conservation Actions**
		Work with private landowners, land management agencies, conservation districts, watershed groups, and other interested parties to conserve and promote healthy riparian habitats beneficial to SGCN and overall community type
Mining contamination and other impacts	Mining contamination and other impacts	Provide decision makers with data on impacts and threats to SGCN
Non-native species competition, predation, and hybridization	Barrier loss Non-native species competition, predation, and hybridization	Construction and monitoring of fish passage barriers to reduce non-native species movement Eliminate competing fish species by piscicides, trapping, or electrofishing
Extirpated or low populations of SGCN	Extirpated or low populations of SGCN	Conduct research to answer necessary questions for key species (e.g. determine habitat use and spawning location) Continue or establish baseline data collection protocol to monitor SGCN relative abundance, distribution, and size structure Continue to collect and analyze biological and physical data through the watershed to evaluate success of habitat restoration and improvement Continue to collect information that helps us better understand the life histories, habitat requirements, and impacts on SGCN Develop and work toward species restoration goals Manage harvest regulations to support low or declining populations

Mountain Streams **31,789 miles**

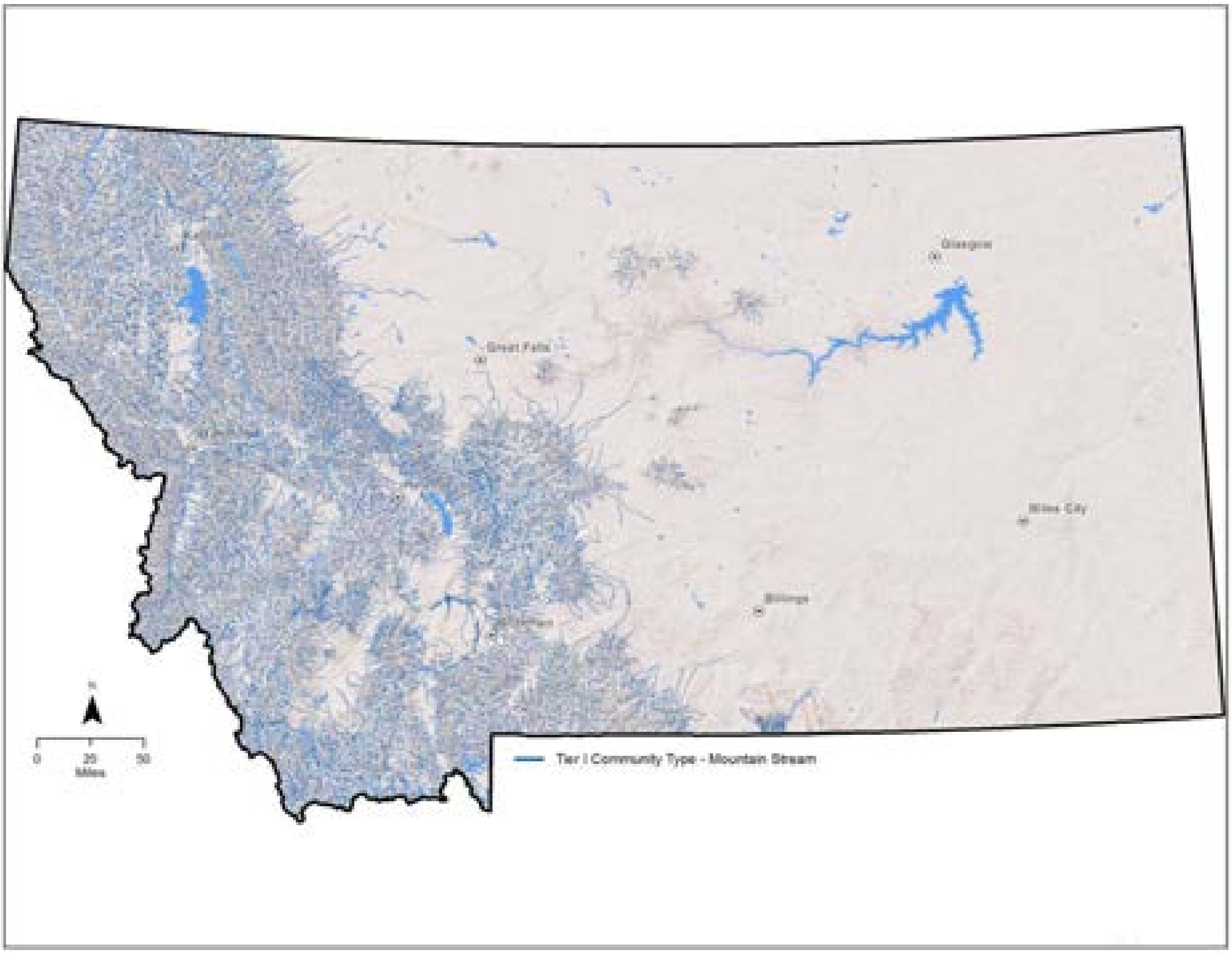

Figure 5. Distribution of Mountain Streams

Mountain streams of western and central Montana are typically cold and clear, and serve as the headwaters for all major river systems in Montana. Mountain streams often flow through montane conifer forests starting at the highest elevations, and can range diversely from high-alpine, steep-gradient reaches to low-gradient, meadow stream types (Stagliano 2005). Abundant native fish species thrive in these waters and are sought after by anglers from around the country.

Many of these native species are declining due to habitat degradation, dams, hybridization, overfishing, and being outcompeted by introduced salmonids. These streams support the remaining genetically pure stocks of Montana's Yellowstone and WCT and bull trout.

Associated SGCN

Fish
Arctic Grayling
Bull Trout
Columbia River Redband Trout
Lake Trout
Northern Redbelly Dace
Northern Redbelly/Finescale Dace
Pygmy Whitefish
Torrent Sculpin
Westslope Cutthroat Trout
Yellowstone Cutthroat Trout

Mollusk
Western Pearlshell

Mountain Streams Current Threats, Future Impacts, and Conservation Actions

Current Threats	Future Impacts	Conservation Actions
Water management: Agriculture Altered temperature regime Chronic dewatering Entrainment in irrigation diversions Interbasin transfers Irrigation withdrawals Reservoir management	Water management : Agriculture Altered temperature regime Chronic and expanded dewatering Deteriorating lake and/or river conditions for migratory fish stocks Entrainment in irrigation diversions Interbasin transfers Irrigation withdrawals Reservoir management	Improve and maintain natural stream form and function by ensuring riparian resiliency through land use management and improving instream flows to accurately reflect species needs Increase instream flows through water leasing and water conservation measures Re-establish flow to intermittent reaches Upgrade and mitigate cumulative impacts of irrigation diversions Work with appropriate agencies (i.e., USACOE, USFS, USFWS, DNRC) to maintain quality aquatic habitats and to mitigate impacts and threats to fisheries resources
Connectivity: Downstream transport: no replacement of large woody debris Fish barriers (e.g., culverts, dams, diversions)	Connectivity: Downstream transport: no replacement of large woody debris Fish barriers (e.g., culverts, dams, diversions)	Enhance and maintain connectivity with lake system Mitigate impacts of irrigation diversions Projects which improve connectivity through restoration of should be priority Restore connectivity by identifying and removing migration barriers, native fish corridors, and/or by installing fish ladders or other fish passage structures
Poor grazing practices Poor range management practices	Poor grazing practices Poor range management practices	Support management practices that maintain riparian vegetation and streambank and channel stability in excellent condition Support government and private conservation activities that encourage and support sustainable land management practices

Current Threats	**Future Impacts**	**Conservation Actions**
		Work with landowners to implement land management practices beneficial to SGCN or overall community type
Riparian management: Channelization Fire recovery Impaired habitat/riparian degradation Landslides Natural sedimentation Stream and riparian encroachment Timber harvest	Riparian management: Channelization Fire recovery Fuel reduction Impaired habitat/expanded riparian degradation Landslides Natural sedimentation Stream and riparian encroachment Timber harvest	Conduct large woody debris projects and channel restoration where needed Potentially provide appropriate incentives to landowners that cooperate in habitat restoration activities to encourage their continued participation Provide technical assistance to local landowners and conservation districts as it pertains to the aquatic habitat, function, and fish assemblage Restore habitat integrity: riparian revegetation when needed
Housing development (residential and urban) Railroad Roads	Housing development (residential and urban) Railroad Roads	Mitigate cumulative impacts of road system
Mining contamination and other impacts	Mining contamination and other impacts	Provide decision makers with data on the impacts and threats to SGCN Work with the USFS and the Department of Environmental Quality in the development of mine clean-up plans and metals reduction (particularly Hg)
Angling pressure Illegal harvest	Angling pressure Illegal harvest	Continue to make recommendations for harvest regulations

Current Threats	Future Impacts	Conservation Actions
	Barrier failure and loss	Barrier reinforcement or replacement
Expansion of non-native fish	Expansion and invasion of non-native fish	Construction and monitoring of fish passage barriers to reduce non-native species movement
Illegal introductions of non-native fish	Illegal introductions of non-native fish	Eliminate competing fish species by piscicides, trapping, or electrofishing
Non-native fish species competition, hybridization, and predation	Non-native fish species competition, hybridization, and predation	Manage harvest regulations for the benefit of SGCN Protection of native species through habitat protection and enhancement and restoring or introducing SGCN into suitable waters
Nuisance blooms of *Didymosphenia geminata*	Nuisance blooms of *Didymosphenia geminata*	Follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (FWP 2002) and updates or revisions to the plan
Extirpated or low populations of SGCN	Extirpated or low populations of SGCN	Conduct research to answer necessary questions for key species (e.g. determine habitat use and spawning location) Construct barriers as needed; isolate conservation populations with passage barriers Continue or establish baseline data collection protocol to monitor SGCN relative abundance, distribution, and size structure Continue to collect and analyze biological and physical data through the watershed to evaluate success of habitat restoration and improvement Continue to collect information that helps us better understand the life histories, habitat requirements, and impacts on SGCN Continue to work with landowners and land managers to secure conservation servitudes in areas key to SGCN restoration

Current Threats	Future Impacts	Conservation Actions
		Develop and work toward species restoration goals Develop conservation populations in currently fishless headwater reaches Identify and remove migration barriers in critical SGCN corridors Manage harvest regulations to support low or declining populations Restore degraded habitat in spawning, rearing, and maturation habitats Work with private landowners and land management agencies to identify high value lands adjacent to habitat important for SGCN for hydropower mitigation Work with counties to update and improve floodplain management to protect habitat important to SGCN
	Climate change	Continue to evaluate current climate science models and recommended actions Continue or establish protocols to monitor thermal data, water flow, and conduct insect surveys Monitor habitat changes and address climate impacts through adaptive management as necessary Restore riparian corridors and proper width:depth ratios

Additional Citations

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan Final. 148 pp.

Stagliano, D. M. 2005. Aquatic Community Classification and Ecosystem Diversity in Montana's Missouri River Watershed. Report to the Bureau of Land Management. Montana Natural Heritage Program, Helena, Montana. 65 pp. plus appendices.

Prairie Rivers and Prairie Streams

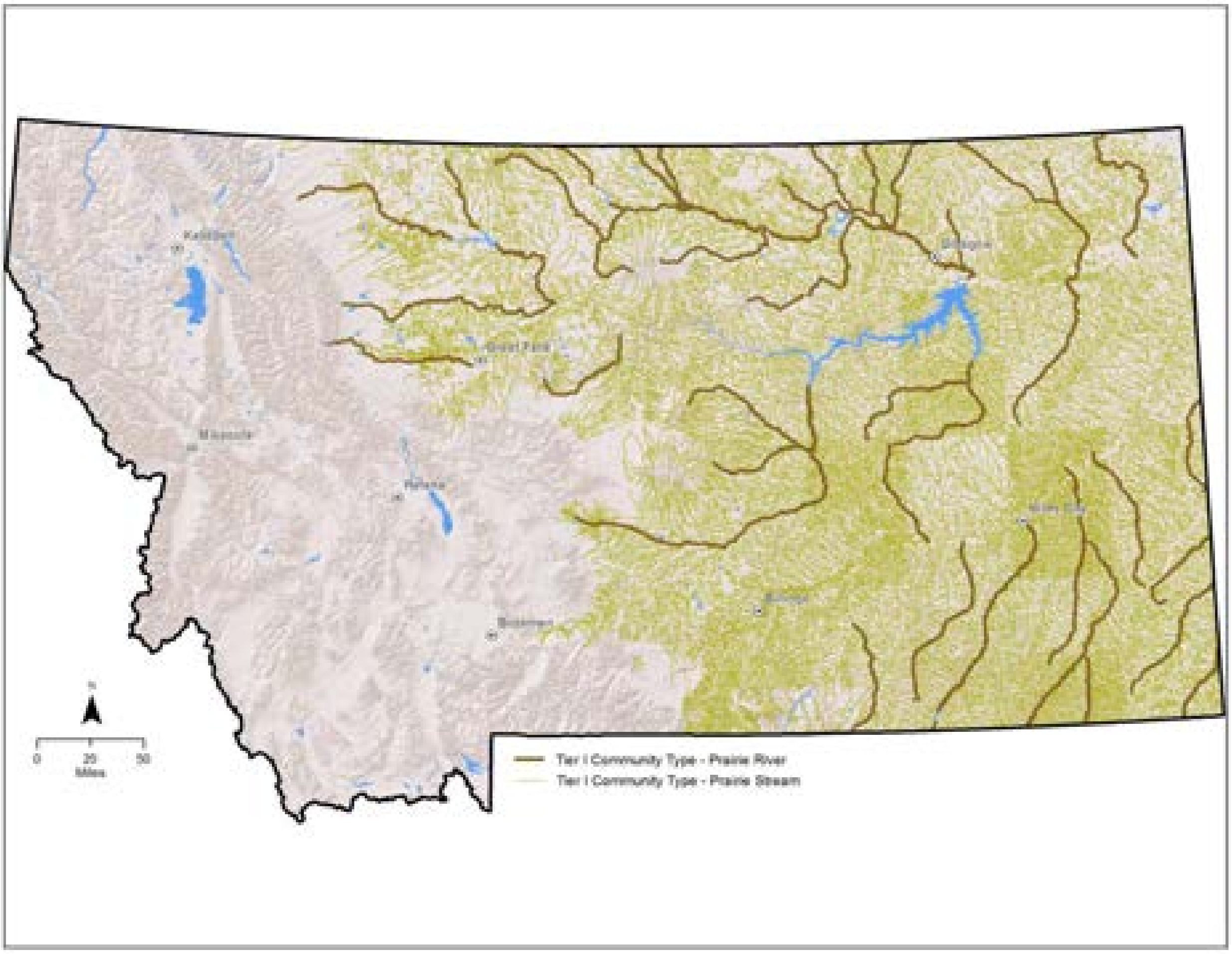

Figure 6. Distribution of Prairie Rivers and Prairie Streams

Prairie Rivers **3,382 miles**

This low elevation (below 3,900 feet) community type is comprised of large (4^{th} and 5th order and larger; >100 river miles long; 50-115 feet average wetted width) warm water rivers that have low to moderate gradients. The characteristics of this community type are long, deep runs; pools (2-7 feet deep); and interspaced riffles. The substrate is typically comprised of cobble riffles (when present) to sand and gravel dominated runs and pools. Important fish habitat is found in the lower reaches of the rivers where large woody debris, deep pools, and undercut banks are found. These lower sections of the rivers also provide many miles of spawning and nursery habitat for warm water fishes during the spring and early summer.

Disruption of natural water flow, such as diversions, flood control, hydroelectric dams, bank armoring, and irrigation withdrawals, have negatively impacted this community type the most (Winston et al. 1991). Barriers to necessary long distance spawning created by diversion dams and submerged spawning habitat by reservoirs have negatively impacted reproduction. Below dams, reaches are impacted by altered water temperatures, introduced fish, unnatural water level fluctuations, and changes in sediment and nutrient transport.

Associated SGCN

Fish

Blue Sucker
Iowa Darter
Northern Redbelly Dace
Northern Redbelly/Finescale Dace
Paddlefish
Pallid Sturgeon
Pearl Dace
Sauger
Shortnose Gar
Sicklefin Chub
Sturgeon Chub

Prairie Streams **29,264 miles**

Prairie Streams in Montana have water either intermittently or permanently flowing through them in an otherwise dry region. These low-elevation streams east of the Rocky Mountains are warmer than their counterparts in western Montana and support a richer and quite different variety of fish. Many of these streams are slow moving and sometimes turbid and weedy, while those in the northern glaciated plains can be as clear as a mountain stream. They offer good rearing habitat for associated fish species, support many amphibians and reptiles, and are crucial for populations of terrestrial wildlife (Stagliano 2005).

The interruption of water flow, such as with small dams, water diversions, and stock ponds has negatively impacted Prairie Streams (Winston et al. 1991).

Associated SGCN

Fish

Iowa Darter
Northern Redbelly Dace
Northern Redbelly/Finescale Dace
Pearl Dace
Sauger
Sturgeon Chub

Prairie Rivers and Prairie Streams Current Threats, Future Impacts, and Conservation Actions

Current Threats	Future Impacts	Conservation Actions
Water management: Agriculture Altered temperature regime Chronic dewatering Entrainment of fish in irrigation diversions Instream flow water rights Interbasin transfers Irrigation withdrawals Off stream reservoirs Reservoir management Stream diversions Water diversions Water withdrawals	Water management: Agriculture Altered temperature regime Chronic dewatering Entrainment of fish in irrigation diversions Instream flow water rights Interbasin transfers Irrigation withdrawals Off stream reservoirs Reservoir management Stream diversions Water diversions Water withdrawals	Improve and maintain natural stream form and function by ensuring riparian resiliency through land use management and improving instream flows to accurately reflect species needs Increased installation of stockwater wells in place of irrigation ditches Investigate/pursue methods to reduce effects of dewatering and entrainment Screening or modification of irrigation diversions or other water intakes in a manner that prevents entrainment of fishes Work with appropriate agencies (i.e., USACOE, USFS, USFWS, DNRC) to maintain quality aquatic habitats and to mitigate impacts and threats to fisheries resources
Connectivity: Fish barriers (e.g., culverts, dams, diversions); these barriers may have a higher impact in low water years	Connectivity: Fish barriers (e.g., culverts, dams, diversions); these barriers may have a higher impact in low water years	Continue to collect data on SGCN that give better insight on how fish passage at dams will affect the aquatic community Projects which improve connectivity should be priority Restore connectivity by identifying and removing migration barriers, native fish corridors, and/or by installing fish ladders or other fish passage structures
Poor grazing practices Poor range management practices	Poor grazing practices Poor range management practices	Support management practices that maintain riparian vegetation and streambank and channel stability in excellent condition Support government and private conservation activities that encourage and support sustainable land management practices

Current Threats	**Future Impacts**	**Conservation Actions**
		Work with landowners to implement land management practices beneficial to SGCN or overall community type
Riparian management	Riparian management	Continue to work with willing landowners to develop channel migration easements Implement bioengineered bank stabilization techniques Participate in educational programs to disseminate data and foster advocacy for fisheries resources Potentially provide appropriate incentives to landowners that cooperate in habitat restoration activities to encourage their continued participation Provide technical assistance to local landowners, conservation districts, agencies, and others as it pertains to the aquatic habitat, function, fish assemblage, and impacts and threats to the fisheries resource Restore habitat integrity: riparian revegetation when needed Work with private landowners, land management agencies, conservation districts, watershed groups, and other interested parties to conserve and promote healthy riparian habitats beneficial to SGCN and overall community type
Housing development (residential and urban) Roads	Housing development (residential and urban) Roads	Provide decision makers with data on impacts and threats to fisheries resources
Habitat fragmentation	Habitat fragmentation	Restore habitat integrity (e.g., wetland restoration)
Mining contamination and other impacts	Mining contamination and other impacts	Provide decision makers with data on the impacts and threats to SGCN

Current Threats	**Future Impacts**	**Conservation Actions**
Coal development Oil and gas exploration and extraction	Coal development Oil and gas exploration and extraction	Support research and scientific studies on impacts of energy development on prairie stream environments in both Montana and Wyoming
Non-native species competition, predation, and hybridization	Barrier failure Non-native species competition, predation, and hybridization	Construction and monitoring of fish passage barriers to reduce non-native species movement Eliminate competing fish species by piscicides, trapping, or electrofishing Protection of native species through habitat protection and enhancement and restoring or introducing SGCN into suitable waters Stock sterile non-native fish for angler harvest
Extirpated or low populations of SGCN	Extirpated or low populations of SGCN	Conduct research to answer necessary questions for key species (e.g. determine habitat use and spawning location) Continue or establish baseline data collection protocol to monitor SGCN relative abundance, distribution, and size structure Continue to collect information that helps us better understand the life histories, habitat requirements, and impacts on SGCN Develop and work toward species restoration goals Manage harvest regulations to support low or declining populations

Current Threats	**Future Impacts**	**Conservation Actions**
	Climate change	Continue to evaluate current climate science models and recommended actions Continue or establish protocols to monitor thermal data, water flow, and conduct insect surveys Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Stagliano, D. M. 2005. Aquatic Community Classification and Ecosystem Diversity in Montana's Missouri River Watershed. Report to the Bureau of Land Management. Montana Natural Heritage Program, Helena, Montana. 65 pp. plus appendices.

Winston, M. R., C. M. Taylor, and J. Pigg. 1991. Upstream extirpation of four minnow species due to damming of a prairie stream. Transactions of the American Fisheries Society 120:98–105.

Lakes and Reservoirs

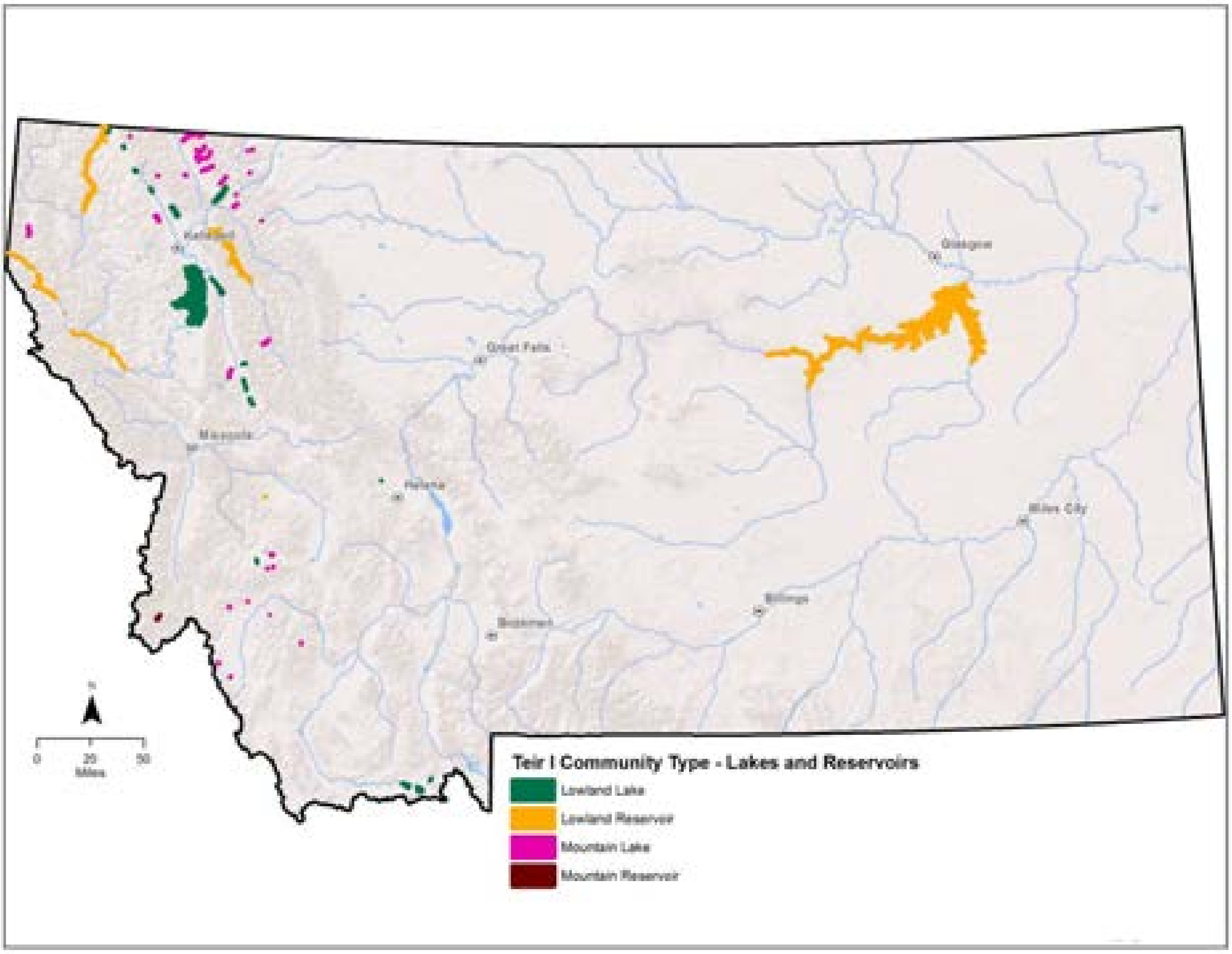

Figure 7. Distribution of Tier I Lakes and Reservoirs

In this SWAP, lakes were categorized as a Tier II community type and reservoirs as a Tier III. However, the technical team acknowledged that some lakes and reservoirs were critical to the persistence of some SGCN, and recommended that specific lakes and reservoirs be elevated to a Tier I community type. The list of these lakes and reservoirs can be found in Appendix F.

Lowland Lakes Associated SGCN

Fish
Arctic Grayling
Blue Sucker
Bull Trout
Lake Trout
Paddlefish
Pallid Sturgeon
Pygmy Whitefish
Sauger
Shortnose Gar
Westslope Cutthroat Trout
Yellowstone Cutthroat Trout

Lowland Reservoirs Associated SGCN

Fish
Arctic Grayling
Bull Trout
Lake Trout
Paddlefish
Pallid Sturgeon
Pygmy Whitefish
Sauger
Trout-perch
Westslope Cutthroat Trout
Yellowstone Cutthroat Trout

Mountain Lakes Associated SGCN

Fish
Arctic Grayling
Bull Trout
Columbia River Redband Trout
Lake Trout
Pygmy Whitefish
Westslope Cutthroat Trout
Yellowstone Cutthroat Trout

Mountain Reservoirs Associated SGCN

Fish
Arctic Grayling
Bull Trout
Columbia River Redband Trout
Westslope Cutthroat Trout
Yellowstone Cutthroat Trout

Lowland Lakes Current Impacts, Future Threats, and Conservation Actions

17-Tier I Lowland Lakes
3,996,656 acres

Current Impacts	**Future Threats**	**Conservation Actions**
Dewatering Lake eutrophication	Dewatering Increased Water withdrawal Lake eutrophication	Monitor water quality Work to reduce water withdrawal
Fish barriers (e.g., culverts, dams, diversions)	Fish barriers (e.g., culverts, dams, diversions)	Enhance fish passage
Timber harvest	Timber harvest	Continue to review timber sales
Angling pressure Illegal harvest	Angling pressure Illegal harvest	Continue to make recommendations for harvest regulations
Non-native species hybridization	Expansion of non-native fish Non-native species hybridization	Construction and monitoring of fish passage barriers to reduce non-native species movement
Extirpated or low populations of SGCN	Extirpated or low populations of SGCN	Continue gill net trend monitoring Continue to monitor fish population trends Develop and work toward species restoration goals
	Climate change	Continue to evaluate current climate science models and recommended actions Continue or establish protocols to monitor thermal data and water quality Monitor habitat changes and address climate impacts through adaptive management as necessary

Lowland Reservoirs Current Impacts, Future Threats, and Conservation Actions **7-Tier I Lowland Reservoirs 123,484 acres**

Current Impacts	**Future Threats**	**Conservation Actions**
Water management: Irrigation withdrawals	Water management: Irrigation withdrawals	Develop a reservoir/river model to better facilitate spawning and rearing habitat needed for optimal growth and survival For Fort Peck Reservoir, follow guidance in the *Fort Peck Reservoir Fisheries Management Plan 2012-2022* (FWP 2012b) Work with appropriate agencies (i.e., USACOE, USFS, USFWS, DNRC) to maintain quality aquatic habitats and to mitigate impacts and threats to fisheries resources
Fish barriers (e.g., culverts, dams, diversions)	Fish barriers (e.g., culverts, dams, diversions)	Enhance fish passage
Non-native species predation, competition, and hybridization	Non-native species predation, competition, and hybridization	Construction and monitoring of fish passage barriers to reduce non-native species movement
Extirpated or low populations of SGCN	Extirpated or low populations of SGCN	Continue to collect baseline data and look for additional opportunities to better understand recruitment of certain SGCN Continue to restore degraded habitat in spawning, rearing, and maturation habitats Continue to work with landowners and land managers to secure conservation servitudes in areas key to SGCN restoration Develop a reservoir/river model to better facilitate spawning and rearing habitat needed for optimal growth and survival Work with USFS to provide best quality multiple use prescriptions for important habitat around the reservoirs

Mountain Lakes Current Impacts, Future Threats, and Conservation Actions

37-Tier I Mountain Lakes
11,077 acres

Current Impacts	Future Threats	Conservation Actions
Dewatering	Dewatering	Protect water quality
Connectivity: Fish barriers (e.g., culverts, dams, diversions)	Connectivity: Fish barriers (e.g., culverts, dams, diversions)	Enhance fish passage
Timber harvest	Timber harvest	Continue to review timber sales
Development Railroad Roads	Development Railroad Roads	Work with local governments and other entities to update and improve the Lake Shore Protection Act
Mining contamination and other impacts	Mining contamination and other impacts	Provide decision makers with data on the impacts and threats to SGCN
Angling pressure	Angling pressure	Continue to make recommendations for harvest regulations
Non-native species predation, competition, and hybridization	Non-native species predation, competition, and hybridization	Continue to monitor native and preferred recreational species and illegally introduced species
Extirpated or low populations of SGCN - isolation makes recruitment highly vulnerable	Extirpated or low populations of SGCN - isolation makes recruitment highly vulnerable	Identify potential creation of important spawning and rearing habitat for SGCN Work with private landowners and land management agencies to identify high value lands adjacent to habitat important for SGCN for hydropower mitigation

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Continue or establish protocols to monitor thermal data and water quality Monitor habitat changes and address climate impacts through adaptive management as necessary

Mountain Reservoirs Current Impacts, Future Threats, and Conservation Actions **2-Tier I Mountain Reservoir 565 acres**

Current Impacts	Future Threats	Conservation Actions
	Improvements to the reservoir or East Fork Rock Creek could impact the entire bull trout population	Improved reservoir management Re-establish flow to intermittent reach
		Review all proposed actions in the drainage to ensure that negative impacts to aquatic habitat are minimized.
		Continue to work with USFS, USFWS, and DNRC on completing East Fork Dam consultation for renewal of the special use permit. Potential improvements that may be achieved through this process include improvement in minimum reservoir elevations and improved flow in intermittent reach above reservoir.
		Participate in land use planning efforts for this drainage when they occur to maximize habitat protection.
		Continue electrofishing surveys to monitor the status of bull trout and to determine whether mitigation measures implemented lead to improvements in this population.

TERRESTRIAL COMMUNITY TYPES AND CONSERVATION ACTIONS

Twelve of the 21 unique terrestrial community types across the 7 Ecoregions, were identified as Tier I. This resulted in 51 geographical areas for which conservation actions needed to be identified. Please note that community types may be found in Ecoregions other than what is depicted on the maps. Only locations where the community types are considered Tier I are displayed and addressed (see Terrestrial Community Types under Methods).

Many of the terrestrial community types in Montana have similar threats, though the magnitude and urgency of those threats may be dissimilar. Likewise, the conservation actions addressing those threats may be different depending on the community type and the geographic area. Threats, impacts, and actions are outlined by individual terrestrial CTGCN in the following pages. However, several conservation actions have been developed for all terrestrial CTGCN and are identified here.

Broad Actions

Collaboration and outreach

- Actively participate with private landowners, watershed groups, non-governmental organizations, state and federal government agencies, local governments, tribes, landtrusts, conservation districts, and other interested parties to: ensure work plans consider wildlife habitat needs during planning and implementation; ensure effective cooperation; work collaboratively; and promote SGCN and habitat conservation while maintaining private land management objectives.
- Conduct outreach to landowners to implement land management practices that benefit SGCN.
- Continue to disseminate information to the public through annual meetings and press releases.
- Continue to work with FWP lands acquisition personnel.
- Educate individuals on the importance of habitat conservation through one-on-one contacts, attending public meetings, and through various media outlets.
- Educate the public and land managers about the high values of CTGCN and how to better manage these habitats in ways that balance their management objectives with the conservation actions outlined in this SWAP.
- Emphasize native vegetative species growth that is beneficial to SGCN seasonally or year-round.
- Identify programs and funding sources that can provide incentives for landowners to conserve, manage, and/or restore habitat for SGCN; potentially provide appropriate incentives to landowners that cooperate in habitat restoration activities.
- Incorporate other agencies' Best Management Practices (BMP) when implementing actions outlined in this SWAP.
- Keep the FWP Regional Citizen Advisory Councils informed of SGCN conservation efforts.
- Provide decision makers with data about pollution impacts on SGCN to help them set water quality standards.
- Work closely with landowners and various government agencies on species restoration plans.

- Work with willing landowners and land management agencies on habitat projects using Habitat Montana (FWP 1994), SWG, and other funding sources.

Conservation areas

- Continue to utilize Habitat Montana (FWP 1994) to review potential acquisitions.
- Encourage and support opportunities such as land acquisitions or perpetual easements to conserve CTGCN.
- Prioritize conservation easements and acquisitions adjacent to current conservation investments in order to create contiguous protected habitat that provide habitat linkages across large landscapes.
- When appropriate, designate an area as an important conservation area, natural area, or special botanical area due to the unique qualities and importance of the community type.
- Work with partners to provide large, connected habitat patches across the state, that are resilient and adaptable to existing impacts and future threats.
- Work with willing landowners, agencies, and organizations to purchase land or acquire conservation easements that support SGCN to: provide access to resources, prevent further habitat fragmentation, and preserve natural habitat function.

Habitat/species work

- Collect trend data and survey SGCN.
- Encourage erosion control through soil management techniques.
- Gather data with respect to SGIN.
- Encourage and support habitat improvement projects within CTGCN.

Planning and review

- Assist in the review and provide recommendations for habitat work proposals completed by land management agencies that may affect CTGCN.
- Consider SGCN and their habitats during development of management plans for WMAs, Fishing Access Sites (FAS), and state parks.
- Develop management plans for CTGCN to benefit SGCN.
- Review and provide recommendations for federal land management planning processes (e.g., roads, timber, grazing) in CTGCN that may impact the community type and associated SGCN.
- Work with other agencies, organizations, and interested parties to promote habitat work to benefit SGCN.

Training and technical assistance

- Provide technical assistance as needed on issues related to SGCN and their habitats.
- Provide technical assistance to landowners who are considering various conservation easement options on their properties that would benefit the conservation priorities outlined in the SWAP.

Statewide Impacts and Threats

Developments/Subdivisions

- Encourage counties and communities to use the FWP subdivision recommendations.
- Review and comment on subdivision requests that have the potential to impact SGCN and make recommendations based on FWP's *Fish and Wildlife Recommendations for Subdivision Development* (FWP 2012).
- When bridges are installed or replaced, use larger bridge spans to avoid or decrease floodplain constrictions (as opposed to small bridges with filled approaches).

Energy Exploration and Extraction – Including coal, oil, gas, Coal Bed Methane, and bentonite exploration and extraction; construction of pipelines.

- Incorporate recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (In prep) for energy development projects
- Review and comment on energy related developments on public lands to minimize negative impacts to SGCN and their habitats

Wind Energy

- Incorporate recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep) for energy development projects
- Review and comment on energy related developments on public lands to minimize negative impacts to SGCN and their habitats

<u>Floodplain and Riparian</u> **3,237,687 acres**
All Ecoregions **3.4% landcover**

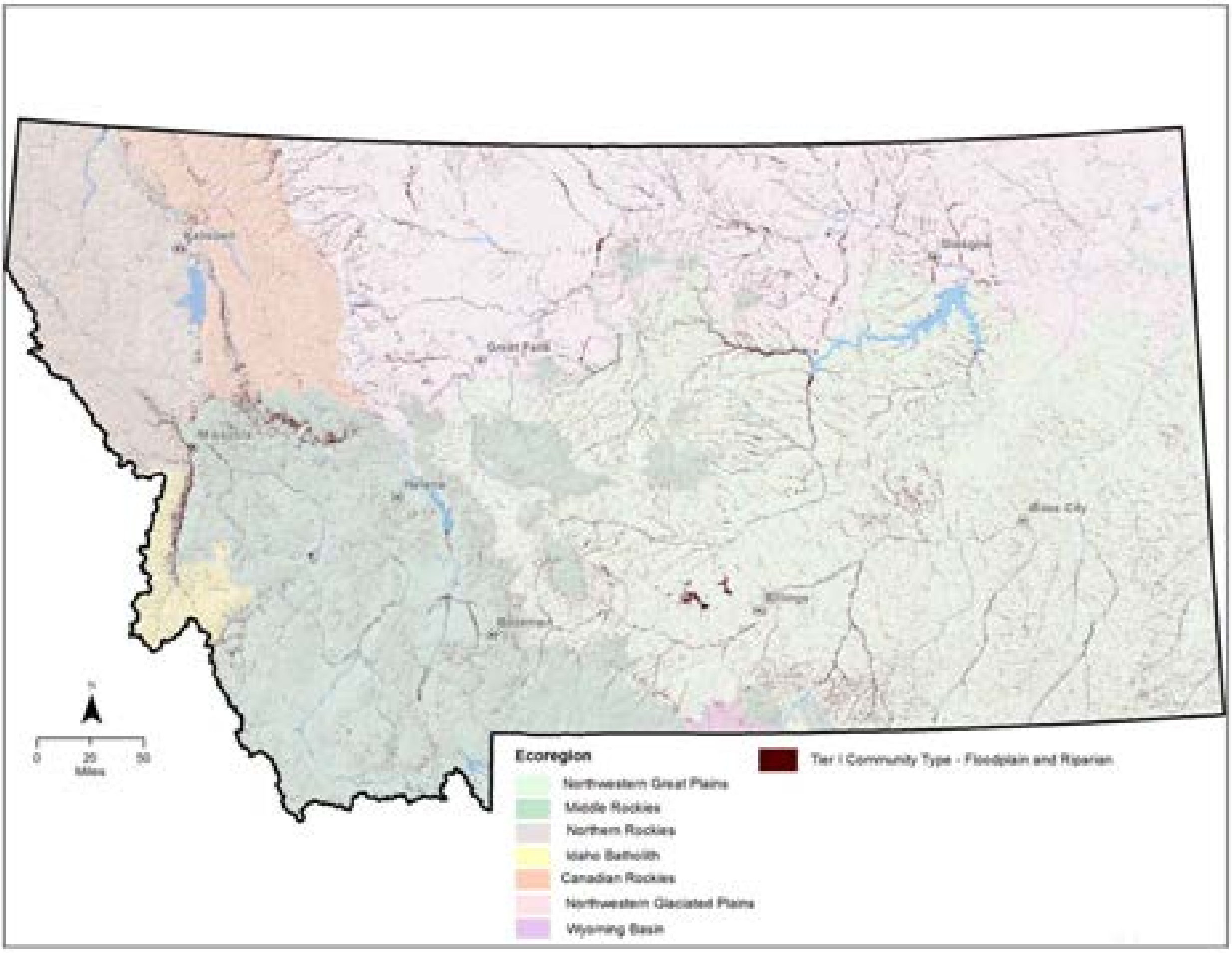

Figure 8. Distribution of Floodplain and Riparian Community Type

This community type is found throughout Montana, adjacent or immediately upland from rivers, and greatly varies in species composition, elevation, soil type, protections, and threats.

Due to the complexity of Floodplain and Riparian systems, each site should be assessed with a site specific approach (e.g., objective, size). Often multiple tools will be needed in combination to reach the specific objectives and to protect, enhance, create, restore and/or improve the functionality of the open water system.

Completing the National Wetland Inventory and riparian habitat mapping would help guide management of this community type.

Associated Terrestrial SGCN

Amphibians
Coeur d'Alene Salamander
Great Plains Toad
Idaho Giant Salamander
Northern Leopard Frog
Plains Spadefoot
Western Toad

Birds
Alder Flycatcher
American Bittern
Baird's Sparrow
Black-backed Woodpecker
Black-billed Cuckoo
Black-crowned Night-Heron
Black-necked Stilt
Bobolink
Boreal Chickadee
Brown Creeper
Burrowing Owl
Cassin's Finch
Clark's Nutcracker
Common Tern
Evening Grosbeak
Ferruginous Hawk
Flammulated Owl
Franklin's Gull
Golden Eagle
Great Blue Heron
Great Gray Owl
Greater Sage-Grouse
Green-tailed Towhee
Harlequin Duck
Le Conte's Sparrow
Least Tern
Lewis's Woodpecker
Loggerhead Shrike
Mountain Plover
Nelson's Sharp-tailed Sparrow
Northern Goshawk
Northern Hawk Owl
Peregrine Falcon
Pileated Woodpecker
Pinyon Jay
Piping Plover
Red-headed Woodpecker
Sharp-tailed Grouse
Varied Thrush
Veery
White-faced Ibis
Yellow-billed Cuckoo

Mammals
Arctic Shrew
Bison
Canada Lynx
Dwarf Shrew
Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Northern Bog Lemming
Northern Short-tailed Shrew
Pallid Bat
Preble's Shrew
Pygmy Shrew
Spotted Bat
Townsend's Big-eared Bat
Wolverine

Reptiles
Greater Short-horned Lizard
Milksnake
Northern Alligator Lizard
Smooth Greensnake
Snapping Turtle
Spiny Softshell
Western Hog-nosed Snake
Western Skink

Floodplain and Riparian Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Agriculture Dewatering Irrigation impacts	Agriculture Dewatering Irrigation impacts	Encourage and restore natural processes and flow regimes in regulated river systems that help to sustain riparian communities and floodplain function, without causing agricultural or other private land impacts. This may require assistance from dam operators to restore a more natural annual flow regime Implement willow and other native riparian shrub planting – to stabilize soils and reduce erosion Maintain or repair water control structures to remove accumulation of debris that may be partially of totally obstructing the flow Minimize non-natural barriers that may inhibit or alter stream edge or other water body edge habitat Monitor water quality to ensure the management of adjacent lands is not adversely affecting open water Use vegetative restoration and other "soft" measures for controlling stream bank Work with irrigation districts to maintain or improve water levels/conditions for particular floodplain and riparian areas important to SGCN Work with landowners and government agencies to limit hydrologic modifications that would have negative impacts on riparian vegetation health over the long-term

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	Develop off-stream water sources or water gaps for livestock Promote recruitment of aspen and cottonwood stands by building exclosures to protect young trees from overbrowsing Provide incentives to private landowners to fence livestock out of riparian areas that could increase nutrient flow into riparian systems Work with landowners and land management agencies to develop a sustainable grazing rotation that will minimize impacts to riparian vegetation, streambank stabilization, and SGCN, and allow for regeneration of cottonwood seedlings and other native vegetation
Land use change: Conversion of native habitat to cropland agriculture Cottonwood tree removal Fire regime Wetland draining	Land use change: Conversion of native habitat to cropland agriculture Cottonwood tree removal Fire regime Green ash removal Loss of riparian habitat because of bank stabilization Russian olive replacing cottonwood Wetland draining	For cottonwood trees that need to be cut for safety purposes, cut off to leave a "high stump" of 10-20 feet tall, if it can safely be done; tall stumps are much more valuable for wildlife than low stumps Promote policies that support the maintenance of native plant communities in both state and federal programs Reestablish native vegetation where opportunities exist and work to control non-native, invasive species such as Russian olive; discourage the use of invasive species in shelterbelts that may spread seed to threaten native riparian communities Work with local watershed groups to develop large scale wetland restoration projects where appropriate

Current Impacts	Future Threats	Conservation Actions
Forest management: Conflicting management policies Off-road Vehicle (ORV) trespass on closed roads Road construction	Forest management: Conflicting management policies Increased ORV use and subsequent illegal use Road construction	Consider seasonal and temporal closures of important SGCN breeding areas to minimize disturbance during sensitive activities such as nesting and brood rearing Evaluate riparian and wetland areas for designation as Important Bird Areas (IBA) Increase enforcement of ORV trespass on public lands Increase education and outreach to ORV community Limit timber harvest in cottonwood riparian habitat, other than to remove exotic species Manage for a range of habitat age classes to sustain old growth forests over time When present, leave large "legacy" trees, burned or unburned, for SGCN that require large-diameter trees; trees greater than 24 inches dbh are especially valuable Where appropriate, leave stringers of trees along drainages and gulches to help maintain cover for travel corridors for larger wildlife species
Bridge construction and enlargement Development/subdivisions Roads	Bridge construction and/or upgrades Development/subdivisions Roads	Encourage completion of channel migration studies to better define future stream meandering in rapidly developing valley areas Utilize as necessary, the planning guide for protecting Montana's wetlands and riparian areas (Ellis and Richard 2008)

Current Impacts	Future Threats	Conservation Actions
Fragmentation: Highway corridors Train and vehicle traffic	Fragmentation: Fences inhibiting wildlife movement Highway corridors Increased road density on public land Road upgrading Increasing train and vehicle traffic	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Manage road density at or below current levels Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities Pollution from urban runoff and superfund sites	Mine contamination from past mining activities New hard rock mines Pollution from urban runoff and superfund sites	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites

Current Impacts	Future Threats	Conservation Actions
Motorized use Recreation - very high at some FAS	Motorized use on logging roads Increased recreation Ski area expansions	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes Remove detrimental exotic species such as Russian olive, salt cedar, and Norway maple When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season; special consideration must be taken in selecting chemicals applied in riparian habitats to avoid negative impacts to water quality Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management

Current Impacts	**Future Threats**	**Conservation Actions**
Aquatic invasive species (including bullfrogs)	Aquatic invasive species (including bullfrogs)	Expand educational efforts to help prevent the spread of invasive animal species Follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (2002) and updates or revisions to the plan Remove and/or restrict the spread and distribution of invasive animals that harm desired native habitat attributes
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Ellis, J. H. and J. Richard. 2008. A Planning Guide for Protecting Montana's Wetlands and Riparian Areas. Montana State University. 113 pp.

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan Final. 148 pp.

Open Water

828,204 acres

All Ecoregions

0.9% landcover

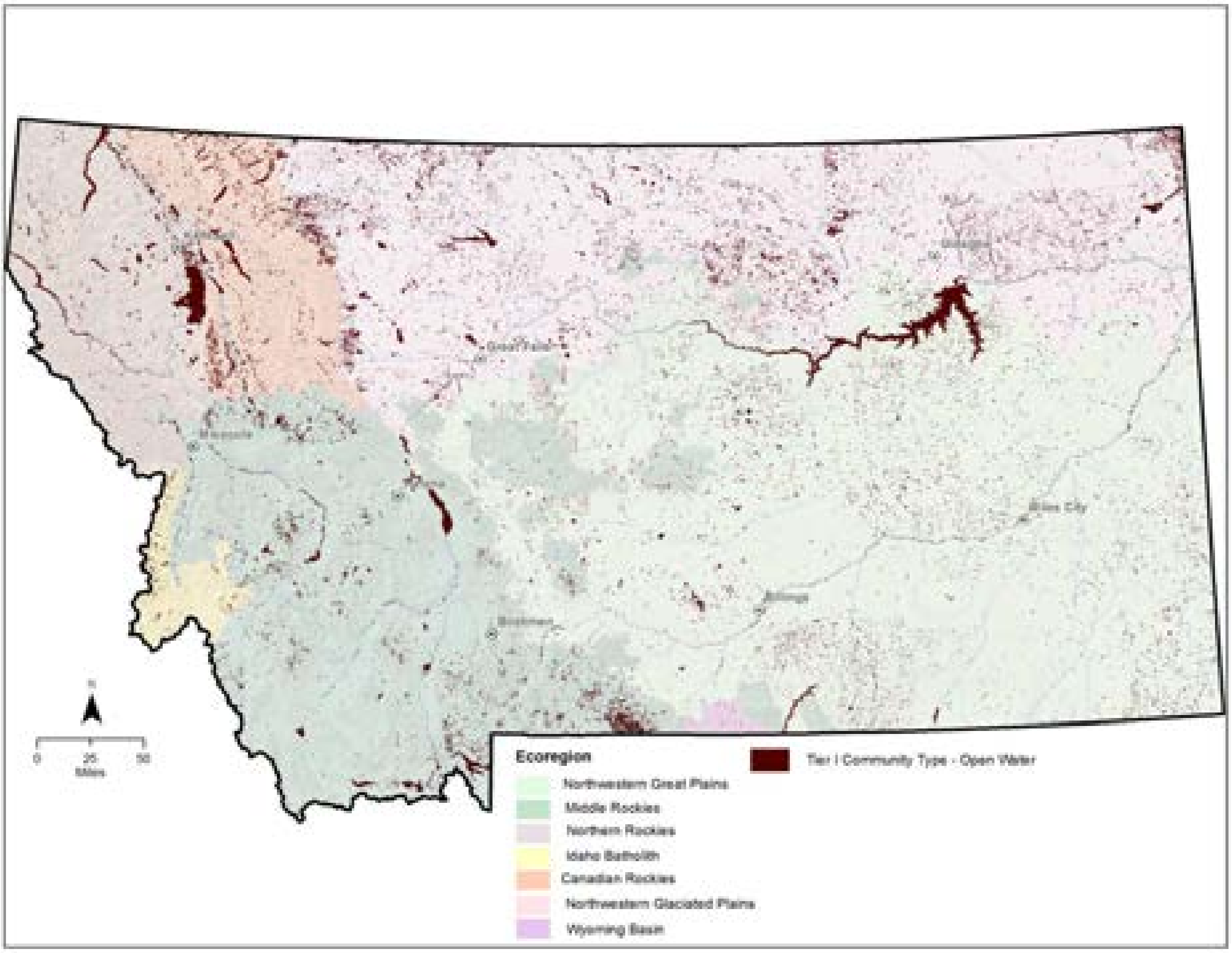

Figure 9. Distribution of Open Water Community Type

The Open Water Community Type includes natural and manmade lakes, reservoirs, large ponds, and the surface areas of rivers. Medium to large rivers in this community type are generally found in low-lying valley bottoms. All of these water features generally have less than 25% vegetation cover or bare soil (e.g., sandbars). The water is still or flowing and is absent of emergent vegetation except around the edges. Geysers and Hot Springs fall under the Open Water community type as well, however less than one square mile is classified as Geysers and Hot Springs in the 2013 Montana Land Cover layers. Because of the small area occupied, and because no SGCN is dependent on Geysers and Hot Springs, they are not considered in this discussion of Open Water.

Due to the complexity of Open Water systems, each site should be assessed with a site specific approach (e.g., objective, size). Often multiple tools will be needed in combination to reach the specific objectives and to protect, enhance, create, restore and/or improve the functionality of the open water system.

Some broader conservation actions include:

- Create artificial nesting platforms, where appropriate, to provide additional nesting opportunities if natural nesting habitat is not available.
- Follow recommendations in *A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2013–2017* (Montana Wetland Council 2013) which includes the overarching wetland goal of no overall net loss of the state's remaining wetland resource base (as of 1989) and an overall increase in the quality and quantity of wetlands in Montana. The Montana Wetland Council also supports the goal to maintain, protect, and restore the ecological integrity of riparian areas.
- Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004), whirling disease, and other waterborne diseases during research, monitoring, management, or recreational activities.
- Implement measures to protect and restore natural shoreline vegetation.
- Maintain beaver or explore restoring beaver in open water systems where they are found currently or historically. Their water manipulations may be critical for maintaining natural biotic diversity. Follow existing FWP protocols on translocating beaver.
- Maximize native aquatic plant growth that is beneficial to SGCN. Refer to Management of Montana's Amphibians (Maxell 2000) for amphibian-specific information.
- Limit the introduction of non-native fish species into waterbodies that support amphibious SGCN.
- Prohibit additional industrial development by waterbodies that could result in release of contaminants or petroleum products.

<u>Associated Terrestrial SGCN</u>

<u>Amphibians</u>
Great Plains Toad
Northern Leopard Frog
Plains Spadefoot
Western Toad

<u>Birds</u>
American Bittern
American White Pelican
Black Swift
Black Tern
Black-crowned Night-Heron
Black-necked Stilt
Caspian Tern
Clark's Grebe
Common Loon
Common Tern
Forster's Tern
Franklin's Gull
Harlequin Duck
Horned Grebe
Least Tern
Peregrine Falcon
Piping Plover
Sedge Wren
Trumpeter Swan
White-faced Ibis

<u>Mammals</u>
Hoary Bat
Spotted Bat
Townsend's Big-eared Bat

<u>Reptiles</u>
Smooth Greensnake
Snapping Turtle
Spiny Softshell

Open Water Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Agriculture Dewatering Irrigation impacts	Agriculture Dewatering Irrigation impacts	Develop open water specific management plans Maintain or repair water control structures to remove accumulation of debris that may be partially of totally obstructing the flow Manage water levels of lakes, reservoirs, rivers, and streams when possible, to mimic natural hydrologic cycles Minimize non-natural barriers that may inhibit or alter water levels Monitor water quality to ensure the management of adjacent lands is not adversely affecting open water Promote and implement water conservation measures in agricultural areas, to minimize impacts of withdrawals on surface water habitats Work with irrigation districts to maintain or improve water levels/conditions for particular open water areas important to SGCN Work with landowners and government agencies to limit additional hydrological modifications (e.g., dams, water diversions) that may be detrimental open water and associated SGCN
Powerline corridor	Powerline permit Utility corridor	Continue to work with local utility companies to mark power lines to reduce lethal collisions Whenever possible, install powerlines underground Work with utility companies and land management agencies to find the best path for new powerlines. Use of existing powerline corridors is ideal or along already disturbed habitat patches such as roads or railroads

Current Impacts	**Future Threats**	**Conservation Actions**
	Fragmentation: Fences inhibiting wildlife movement	Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species
Mine contamination from past mining activities Pollution from urban runoff and superfund sites	Mine contamination from past mining activities New hard rock mines Pollution from urban runoff and superfund sites	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites
Oil and gas exploration and extraction Pipelines	Oil and gas exploration and extraction Pipelines	Encourage implementation of measures to reduce risk of oil spills into water bodies from train accidents, pipelines, oil wells, or other source activities
Motorized watercraft use Recreation - very high at some FAS	Motorized watercraft use Increased recreation	Increase education and outreach to watercraft users Increase enforcement of watercraft use
Aquatic invasive species (including bullfrogs)	Aquatic invasive species (including bullfrogs)	Expand educational efforts to prevent the spread of invasive species Follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (2002) and updates or revisions to the plan Remove and/or restrict the spread and distribution of invasive animals that harm desired native habitat attributes
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Maxell, B. A., G. Hokit, J. Miller, and K. Werner. 2004. Detection of (*Batrachochytrium dendrobatidis*), the Chytrid Fungus Associated with Global Amphibian Declines, in Montana Amphibians. PowerPoint presentation.

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan Final. 148 pp.

Montana Wetland Council. 2013. A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2013–2017. 48 pp.

<u>Wetlands</u> **534,369 acres**
All Ecoregions **0.6% landcover**

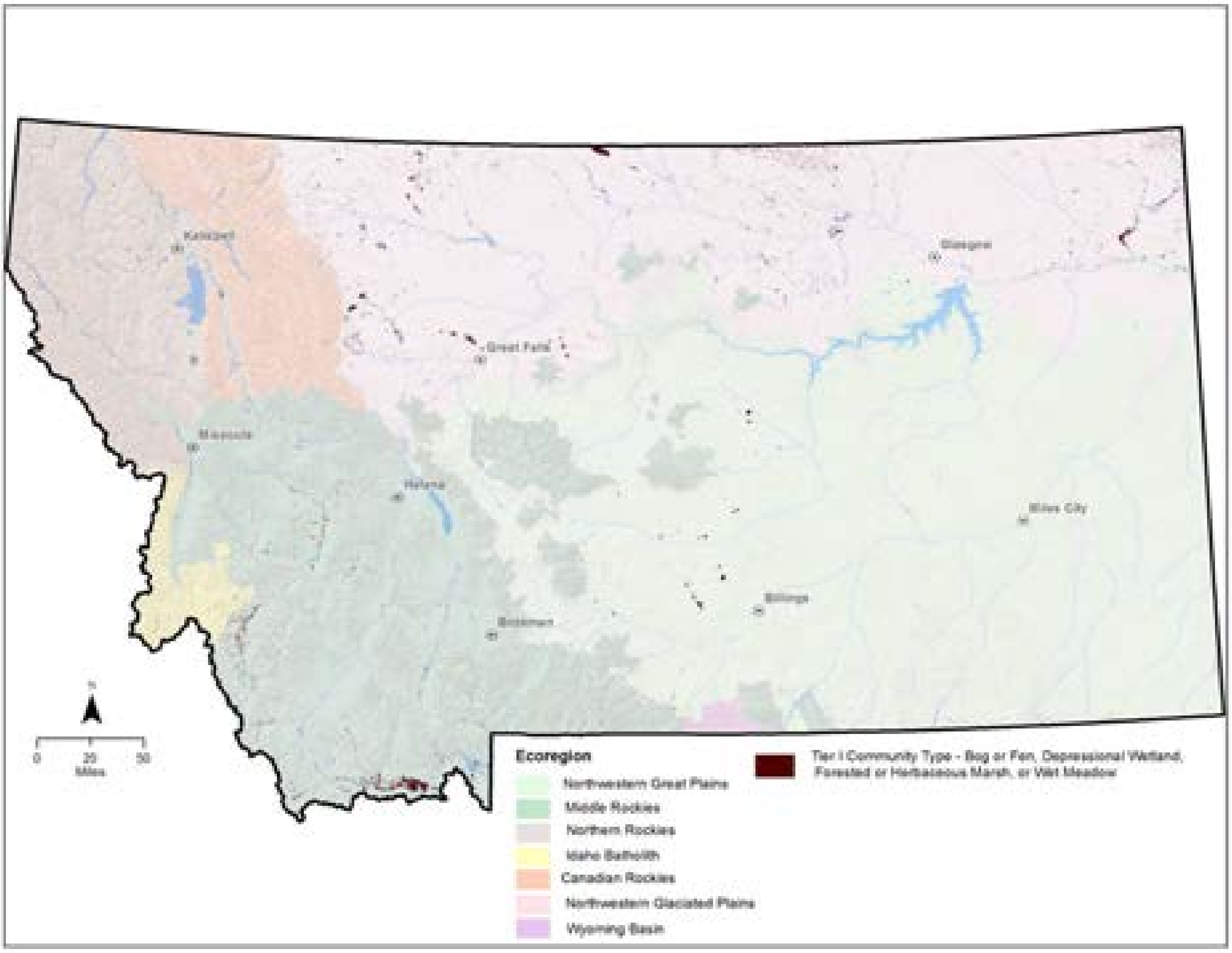

Figure 10. Distribution of Wetland Community Types

In Montana, there are 5 types of wetland community types: Bog and Fen, Forested Marsh, Herbaceous Marsh, Wet Meadow, and Depressional Wetland. While somewhat different in SGCN associations and locations in the state, most of these types are impacted by very similar threats, so they were addressed together.

Due to the complexity of wetland creation, enhancement, restoration, and the wide variety of wetland types, each site should be assessed with a site specific approach (e.g., objective, size). Often multiple tools will be needed in combination to reach the specific objectives and to protect, enhance, create, restore and/or improve the functionality of the wetland system.

Some broader conservation actions include:

- Better mapping of Montana wetlands is needed, through completion of the National Wetland Inventory and associated ground-truthing; a complete inventory of rare biota that are often associated with these habitats is needed.

- Identify ecologically significant wetlands as has been done by MNHP based on size, wetland condition, upland condition, diversity of plant communities, and presence of SGCN
- Existing wetland buffers typically used by management agencies around wetlands may be inadequate. Roads, trails, and timber harvest close to wetlands can cause eutrophication from sediment runoff and encourage invasion by noxious weeds. Buffers should be a minimum of 300 feet from the edge of the wetland.
- Follow recommendations in *A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2013–2017* (Montana Wetland Council 2013) which includes the overarching wetland goal of no overall net loss of the state's remaining wetland resource base (as of 1989) and an overall increase in the quality and quantity of wetlands in Montana. The Montana Wetland Council also supports the goal to maintain, protect, and restore the ecological integrity of riparian areas.
- Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004), whirling disease, and other waterborne diseases during research, monitoring, management, or recreational activities.
- Maintain beaver or explore restoring beaver in wetland systems where they are found currently or historically. Their water manipulations may be critical for maintaining natural biotic diversity. Follow existing FWP protocols on translocating beaver.
- Maximize native aquatic species growth that is beneficial to waterbird, waterfowl, or amphibians. Refer to *Management of Montana's Amphibians* (Maxell 2000) for species specific information.
- Provide decision makers with data about pollution impacts on at-risk aquatic species to help them set water quality standards for key wetlands.
- Utilize as necessary the planning guide for protecting Montana's marsh and riparian areas (Ellis and Richard 2008).

Bog or Fen Associated Terrestrial SGCN

Amphibians
Western Toad

Birds
Alder Flycatcher
American Bittern
Clark's Nutcracker
Great Blue Heron
Great Gray Owl
Le Conte's Sparrow
Northern Hawk Owl
Varied Thrush

Mammals
Fisher
Fringed Myotis
Grizzly Bear
Northern Bog Lemming
Pygmy Shrew
Townsend's Big-eared Bat

Depressional Wetland Associated Terrestrial SGCN

Amphibians
Great Plains Toad
Northern Leopard Frog
Plains Spadefoot
Western Toad

Birds
Alder Flycatcher
American Bittern
American White Pelican
Baird's Sparrow
Black Tern
Black-crowned Night-Heron
Black-necked Stilt
Bobolink
Clark's Grebe
Common Tern
Evening Grosbeak
Ferruginous Hawk
Forster's Tern
Franklin's Gull
Great Blue Heron
Great Gray Owl
Greater Sage-Grouse
Horned Grebe
Le Conte's Sparrow
Loggerhead Shrike
Nelson's Sharp-tailed Sparrow
Northern Goshawk
Northern Hawk Owl
Peregrine Falcon
Piping Plover
Sedge Wren
Varied Thrush
White-faced Ibis

Mammals
Arctic Shrew
Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Northern Bog Lemming
Northern Short-tailed Shrew
Preble's Shrew
Pygmy Shrew
Spotted Bat
Townsend's Big-eared Bat

Reptiles
Smooth Greensnake
Western Hog-nosed Snake

Forested Marsh Associated Terrestrial SGCN

Amphibians
Western Toad

Birds
Alder Flycatcher
Brown Creeper
Great Blue Heron
Northern Goshawk
Northern Hawk Owl
Pileated Woodpecker
Varied Thrush

Mammals
Fisher
Fringed Myotis
Grizzly Bear
Northern Bog Lemming
Pygmy Shrew
Townsend's Big-eared Bat

Herbaceous Marsh Associated Terrestrial SGCN

Amphibians
Great Plains Toad
Northern Leopard Frog
Plains Spadefoot
Western Toad

Birds
American Bittern
American White Pelican
Black Tern
Black-crowned Night-Heron
Black-necked Stilt
Bobolink
Clark's Grebe
Common Loon
Common Tern
Forster's Tern
Franklin's Gull
Great Blue Heron
Horned Grebe
Le Conte's Sparrow
Nelson's Sharp-tailed Sparrow
Peregrine Falcon
Trumpeter Swan
White-faced Ibis

Mammals
Fringed Myotis
Grizzly Bear
Hoary Bat
Northern Bog Lemming
Spotted Bat
Townsend's Big-eared Bat

Reptiles
Snapping Turtle
Western Hog-nosed Snake

Wet Meadow Associated Terrestrial SGCN

Amphibians
Northern Leopard Frog
Western Toad

Birds
American Bittern
Black Rosy-Finch
Black-crowned Night-Heron
Bobolink
Clark's Nutcracker
Ferruginous Hawk
Franklin's Gull
Gray-crowned Rosy-Finch
Great Blue Heron
Great Gray Owl
Green-tailed Towhee
Le Conte's Sparrow
Peregrine Falcon
Trumpeter Swan
White-faced Ibis

Mammals
Grizzly Bear
Hoary Bat
Northern Bog Lemming
Pygmy Shrew
Townsend's Big-eared Bat
Wolverine

Wetlands Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Agriculture Dewatering Irrigation impacts	Agriculture Dewatering Irrigation impacts Water level changes and nutrient inflow	Avoid activities upstream or up-drainage from wetlands that may contribute to excessive nutrients or altered water flows Avoid additional hydrologic modifications that would have negative impacts on wetland vegetation health over the long-term, including water diversions, dams, channel modifications, or excessive groundwater withdrawals Encourage and restore natural processes and flow regimes to wetlands without causing agricultural or other private land impacts, in order to benefit natural wetland vegetation species growth Maintain natural water barriers and/or remove unnecessary or man-made barriers to maintain or improve habitat conditions Maintain or repair water control structures to remove accumulation of debris that may be partially of totally obstructing the flow Minimize non-natural barriers that may inhibit or alter wetland water levels Monitor water quality to ensure the management of adjacent lands is not adversely affecting wetlands When necessary, work with irrigation districts to maintain or improve water levels/conditions for particular wetlands important to SGCN Work with private landowners and management agencies to restore wetlands in places where they have been drained; promote NRCS wetland programs to willing landowners to expand opportunities to achieve wetland restoration

Current Impacts	**Future Threats**	**Conservation Actions**
Poor grazing practices	Poor grazing practices	Develop watering sites adjacent to wetlands to reduce impacts within the wetlands Provide escape ramps in stock tanks to prevent drowning of small mammals and birds Provide incentives to private landowners to fence livestock out of wetlands and prevent other activities that could increase nutrient flow into wetlands Work with landowners and land management agencies to develop a sustainable grazing rotation that will minimize impacts to wetland vegetation; soil; and SGCN, especially during sensitive periods (e.g., nesting); and allow for regeneration of cottonwood seedlings and other native vegetation
Land use change: Cottonwood tree removal Fire regime Some wetland draining	Land use change: Cottonwood tree removal Fire regime Green ash removal Peat mining Russian olive replacing cottonwood Increased wetland draining	Avoid peat mining or other vegetation manipulation Manage for emergent canopy cover for breeding avian SGCN habitat Reestablish native vegetation where opportunities exist Remove Russian olive, salt cedar, and other exotic plants from wetlands when possible When appropriate, control conifer (juniper and/or Douglas fir) invasion by cutting or burning individual trees; prescribed fire over large landscapes may destroy valuable habitat and therefore individual trees should be targeted Work with local watershed groups to develop large scale wetland restoration projects where appropriate

Current Impacts	Future Threats	Conservation Actions
Forest management: Conflicting management policies ORV trespass on closed roads Roads	Forest management: Conflicting management policies Increased ORV use and subsequent illegal use Roads	Avoid wetlands during road construction and provide adequate buffers around them Decommission old/unused roads Determine the need for reseeding and/or resource management after wildland fires; monitor site for noxious weeds Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Promote use of native plants for restoration for reclaiming roads Protect wetlands from large wildfires, when possible; firebreak construction should be done at least 300 feet from the edges of the wetland to avoid negative impacts to the wetland Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to wetland habitats and associated SGCN
Bridge construction and enlargement Development/subdivisions Powerline corridor Roads	Bridge construction and enlargement Development/subdivisions Powerline permit Roads Utility corridor	Continue to work with local utility companies to mark power lines to reduce lethal collisions Re-route or remove and reclaim roads and trails that are causing resource damage to wetlands Roads should be constructed to have minimal to no impact on wetlands and associated SGCN Whenever possible, install powerlines underground

Current Impacts	Future Threats	Conservation Actions
		Work with landowners and land management agencies to limit activities that may be detrimental to wetlands and associated SGCN Work with utility companies and land management agencies to find the best path for new powerlines. Use of existing powerline corridors is ideal or along already disturbed habitat patches such as roads or railroads
Fragmentation: Highway corridors Train and vehicle traffic	Fragmentation: Fences inhibiting wildlife movement Highway corridors Increasing train and vehicle traffic Increased road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Manage road density at or below current levels Promote wildlife-friendly fencing when needed; remove fences that are obsolete Remove fences to prevent collisions/entanglement by wildlife Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills

Current Impacts	Future Threats	Conservation Actions
Mine contamination from past mining activities Pollution from urban runoff and superfund sites	Mine contamination from past mining activities and expansion of mining New hard rock mines Pollution from urban runoff and superfund sites	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites
Motorized use ORV trespass on closed roads Recreation	Motorized use on logging roads Increased ORV use and subsequent illegal use Increased recreation Ski area expansions	Any pack stock should be fed certified weed-free or pelletized feed Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Re-route or remove and reclaim roads and trails that are causing resource damage to wetlands Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands
Weeds	Weeds	Assist landowners, local governments, and other agencies with existing weed control programs when feasible Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes

Current Impacts	**Future Threats**	**Conservation Actions**
		Remove detrimental exotic species such as Russian olive, salt cedar, and Norway maple When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season; special consideration must be taken in selecting chemicals applied in wetland habitats to avoid negative impacts to water quality Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Aquatic invasive species (including bullfrogs)	Aquatic invasive species (including bullfrogs)	Expand educational efforts to help prevent the spread of invasive animal species Follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (2002) and updates or revisions to the plan Remove and/or restrict the spread and distribution of invasive animals that harm desired native habitat attributes
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Ellis, J. H. and J. Richard. 2008. A Planning Guide for Protecting Montana's Wetlands and Riparian Areas. Montana State University. 113 pp.

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Maxell, B. A., G. Hokit, J. Miller, and K. Werner. 2004. Detection of (*Batrachochytrium dendrobatidis*), the Chytrid Fungus Associated with Global Amphibian Declines, in Montana Amphibians. PowerPoint presentation.

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan Final. 148 pp.

Montana Wetland Council. 2013. A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2013–2017. 48 pp.

<u>Alpine Grassland and Shrubland & Alpine Sparse or Barren</u> **282,476 acres**
Ecoregion: Canadian Rockies **0.3% landcover**

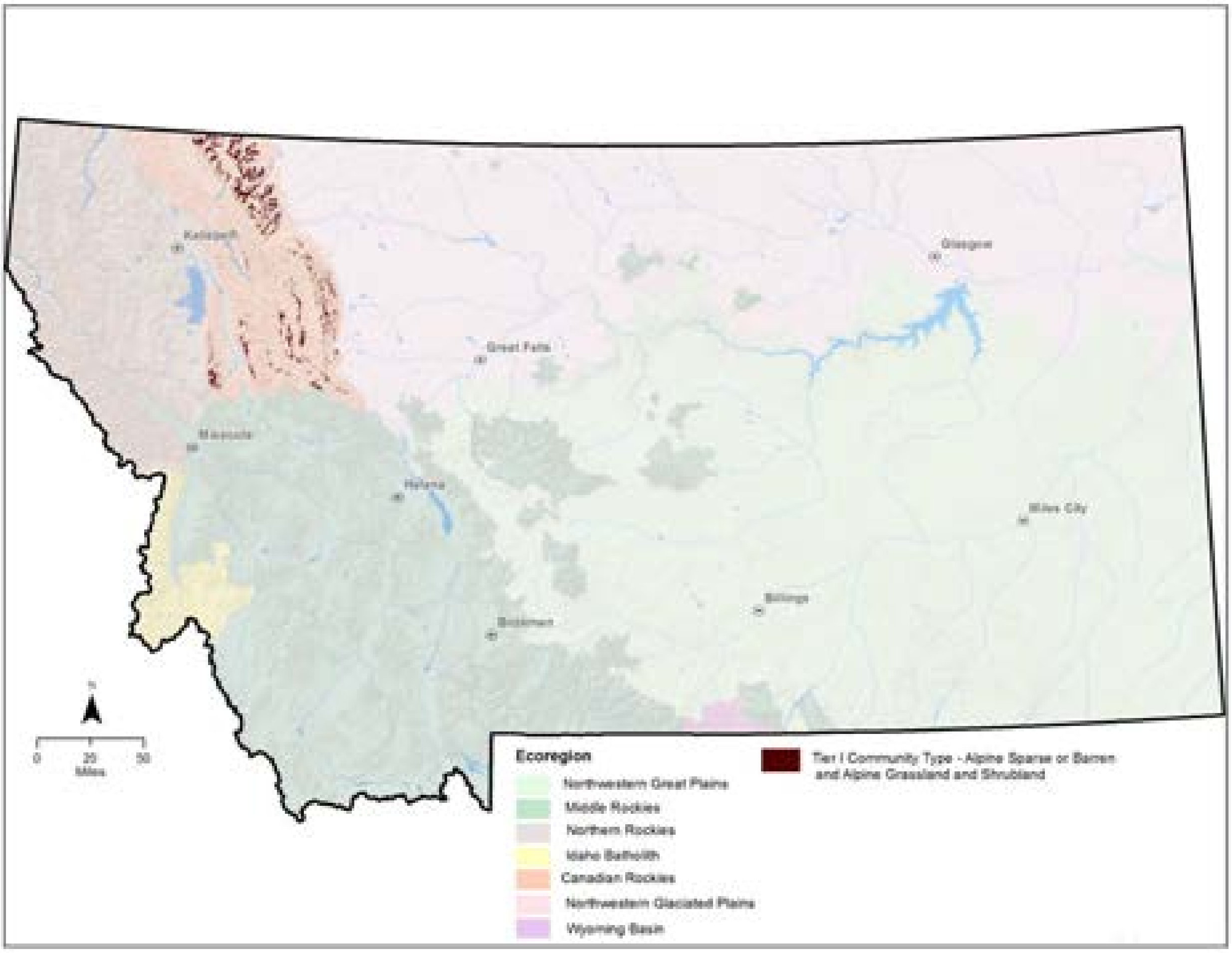

Figure 11. Distribution of Tier I Alpine Grassland and Shrubland & Alpine Sparse and Barren

The alpine community types are found at elevations above 6,600 feet in Montana. The vegetation cover is generally no more than 50%, and ranges in height from 5 inches (sedges, rushes, grasses, and forbs) to 1.6 feet (dwarf shrublands). At the highest elevations, above 7,500 feet, there is less vegetation, and ground cover varies from bedrock and scree to perennial ice. The entire area is characterized by a cold, short growing season, and generally heavy snow accumulation except where the wind keeps it blown free.

This entire community is fragile and is easily impacted. Though it is slow to recover, areas impacted by direct human contact are restricted by access. A bigger impact is the changing climate causing melting snow to be more than snow accumulation, and the retreating of ice fields.

Associated Terrestrial SGCN

Birds
Black Rosy-Finch
Black Swift
Golden Eagle
Gray-crowned Rosy-Finch
Peregrine Falcon
White-tailed Ptarmigan

Mammals
Dwarf Shrew
Fisher
Grizzly Bear
Wolverine

Alpine Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	Work with landowners and land management agencies to develop a sustainable grazing rotation that will limit impacts to sensitive alpine areas
Recreation	Recreation	Evaluate recreational use such as campsites that can trample sensitive vegetation and incorporate potential restrictions if necessary
Climate change	Climate change	Actively pursue research and monitoring of vegetative species impacted by warming climate Collect baseline data in order to document shifting range limits (latitude and elevation) of alpine species Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary
	Connectivity	Encourage conservation projects that improve or provide connectivity between alpine habitats Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact connectivity between the high alpine areas

<u>Conifer-Dominated Forest and Woodland (mesic-wet)</u> **2,449,370 acres**
Ecoregions: Idaho Batholith Northern Rockies **2.6% landcover**

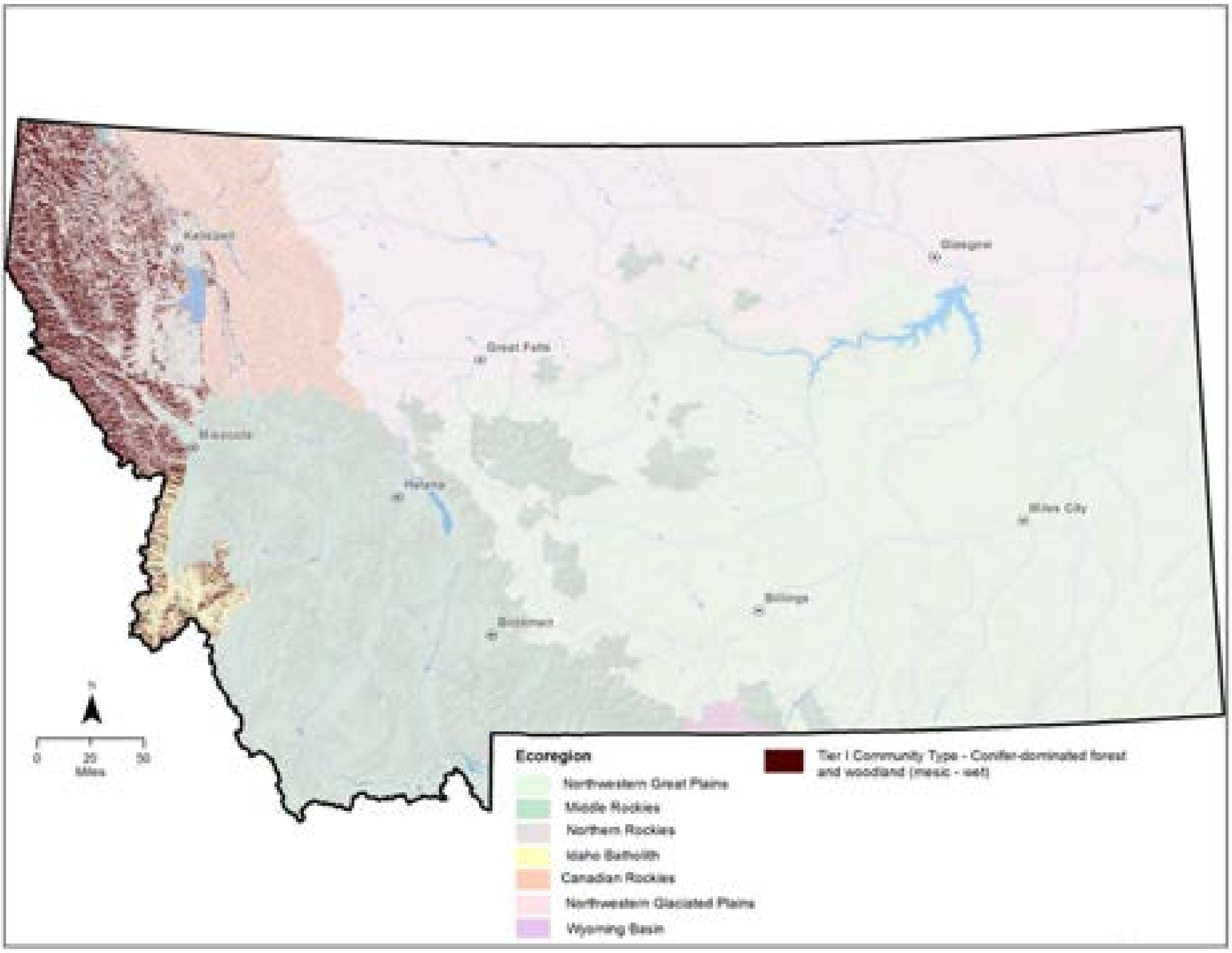

Figure 12. Distribution of Tier I Conifer-dominated Forest and Woodland (mesic-wet)

The mixed conifer forest dominated by western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*), and grand fir (*Abies grandis*) are found at elevations in Montana from 2,000-5,200 feet. The Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) dominated forest is found from 2,900-8,800 feet.

In the past, this community type was a priority for timber production in northwestern Montana. Large, old stumps from past harvest activities provide evidence that large-bowled trees used to be much more abundant on the landscape than they are today. Some broader conservation actions for this community type include:

- Educate the public and land managers about the high values of snags, mature and old growth stands, large "legacy" trees, burned forest, and large woody debris to SGCN.
- Long-term management goals should be to move towards conditions (e.g., old growth) that more closely match historic conditions.
- Manage for a variety of age-classes across the landscape to ensure recruitment from mature stands into future old-growth stands.

Associated Terrestrial SGCN

Amphibians
Coeur d'Alene Salamander
Idaho Giant Salamander
Western Toad

Birds
Black-backed Woodpecker
Boreal Chickadee
Brown Creeper
Cassin's Finch
Clark's Nutcracker
Evening Grosbeak
Flammulated Owl
Great Gray Owl
Northern Goshawk
Northern Hawk Owl
Pileated Woodpecker
Varied Thrush

Mammals
Canada Lynx
Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Pygmy Shrew
Townsend's Big-eared Bat
Wolverine

Reptiles
Northern Alligator Lizard

Conifer-dominated Forest and Woodland (mesic-wet) Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Land use change: Fire regime	Land use change: Fire regime	Avoid burning stands of western red cedar, western hemlock, and grand fir when possible Provide for a range of habitat age classes to sustain preferred habitats over time Restore fire as a natural process in this community type where appropriate; the wetter habitat types within this community type are usually not subjected to stand-replacing fires
Forest management: Conflicting management policies ORV trespass on closed roads Roads	Forest management: Conflicting management policies Increased ORV use and subsequent illegal use Roads	Conduct salvage logging in fall and winter to avoid nesting seasons for avian SGCN During salvage activities, leave patches of snags rather than single snags standing Incorporate a diversity of native grasses, forbs, and shrubs appropriate for this forest type when reclaiming abandoned logging roads and other disturbed areas Increase enforcement of ORV trespass on public lands Increase education and outreach to ORV community Leave large woody debris (such as logs >12 inches dbh and >6 feet long) during thinning and harvest operations; leave in piles to the extent consistent with Montana slash law (MCA 76-13-401), to mimic areas of natural blow-down Leave stringers of trees along drainages and gulches to help maintain cover for travel corridors for larger wildlife species

Current Impacts	Future Threats	Conservation Actions
		Leave the largest and as many snags per acre as possible, when conducting commercial, thinning, or salvage harvest activities Limit or avoid spraying for spruce budworm, pine whites, and other native forest pests, except as needed around campgrounds and other special areas Maintain leaning snags when thinning forests Manage older high-elevation spruce-fir stands to maintain high horizontal cover Manage road density at or below current levels Manage timber stands in a variety of successional stages across the landscape to benefit a variety of SGCN Snags in open areas vulnerable to wind throw can be cut off to leave a "high stump" of 10-20 feet tall, if suitable logging equipment can be deployed in the area When present, leave large "legacy" trees, burned or unburned, for SGCN that require large-diameter trees; trees greater than 24 inches dbh are especially valuable
Fragmentation: Highway corridors	Fragmentation: Highway corridors Increasing train and vehicle traffic Increased road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Manage road density at or below current levels

Current Impacts	Future Threats	Conservation Actions
		Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities	Mine contamination from past mining activities New hard rock mines	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with landowners and land management agencies to limit impacts of hard rock mining on mature and old growth stands and negatively impact SGCN
Recreation	Increased recreation Motorized use on logging roads Ski area expansions	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands
Weeds	Weeds	Assist landowners, local governments, and other agencies with existing weed control programs when feasible Implement invasive plant species control – mechanical, biological, and chemical tools should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season

Current Impacts	**Future Threats**	**Conservation Actions**
		Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

<u>Conifer-dominated Forest and Woodland (xeric-mesic)</u> **16,804,694 acres**

Ecoregions: Canadian Rockies, Northern Rockies, Idaho Batholith, Northwestern Great Plains, Middle Rockies, Wyoming Basin **17.9% landcover**

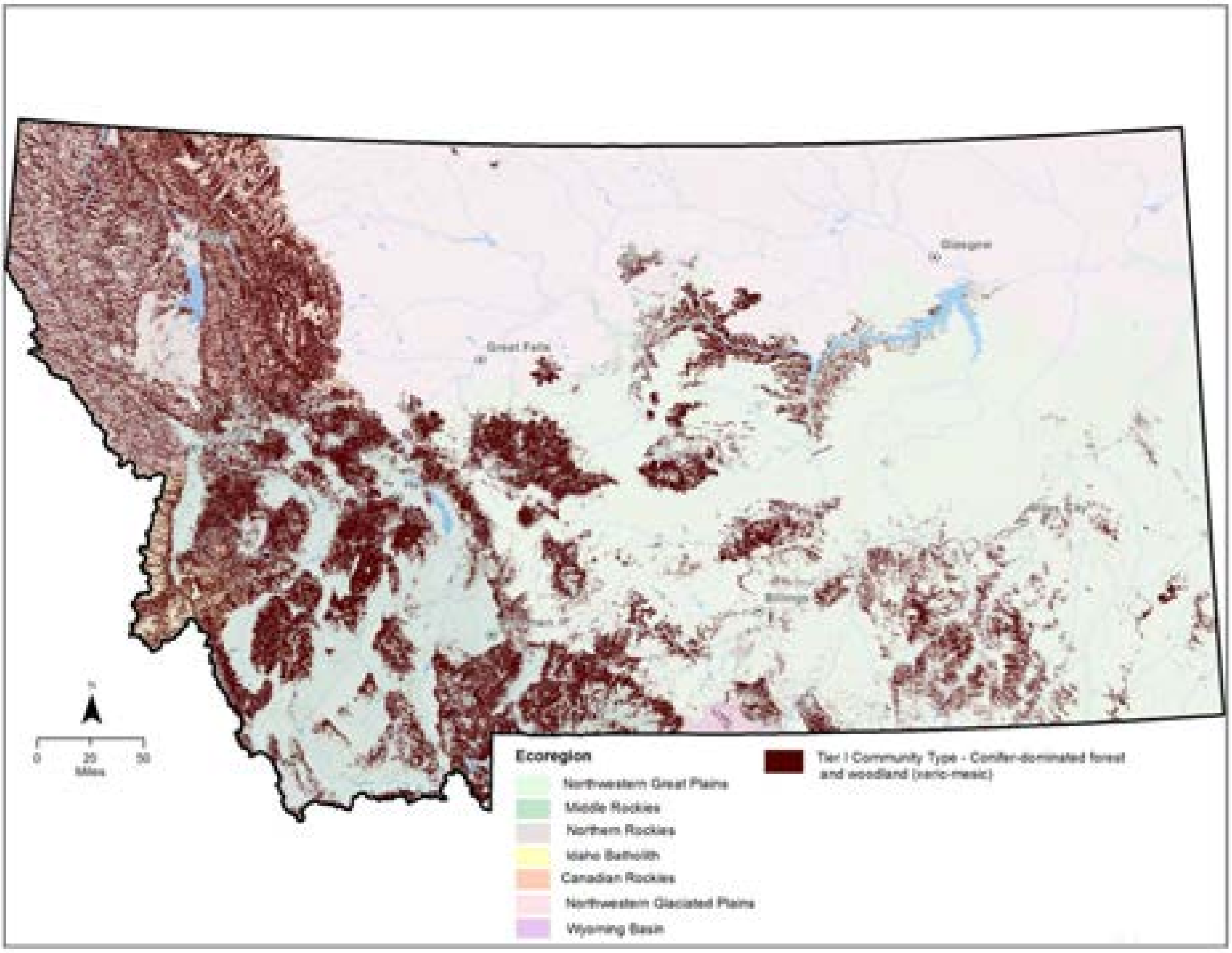

Figure 13. Distribution of Tier I Conifer-dominated Forest and Woodland (xeric-mesic)

This community type is found throughout Montana in elevations ranging from 2,900-9,500 feet. It is a dry tolerant community type that experiences long precipitation-free periods during the summer.

The dominant conifer species vary based on elevation and soil type and can be lodgepole pine (*Pinus contorta*); Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*); whitebark pine (*Pinus albicaulis*); ponderosa pine (*Pinus ponderosa*); Douglas-fir (*Pseudotsuga menziesii*); limber pine (*Pinus flexilis*), western larch (*Larix occidentalis*), western white pine (*Pinus monticola*), and rocky mountain juniper (*Juniperus scopulorum*).

According to DNRC's forest assessment (DNRC 2010), the impacts of fire and insects are due to "an uncharacteristic increase in forest density within ponderosa pine and Douglas fir forests." In western Montana, Douglas fir has replaced ponderosa pine in 25-40% of the area, and western white pine has been reduced by 95% due to disease introductions and the mountain pine beetle. Lack of fire or other ground disturbance has reduced western larch by 40% (DNRC 2010).

Fire and insects drive this community type more than any other factors. Prescribed fires can be used to maintain this community in the absence of natural fires.

Associated Terrestrial SGCN

Amphibians
Idaho Giant Salamander
Plains Spadefoot
Western Toad

Birds
Black-backed Woodpecker
Black-billed Cuckoo
Blue-gray Gnatcatcher
Boreal Chickadee
Brewer's Sparrow
Brown Creeper
Cassin's Finch
Clark's Nutcracker
Evening Grosbeak
Ferruginous Hawk
Flammulated Owl
Golden Eagle
Great Gray Owl
Green-tailed Towhee
Lewis's Woodpecker
Loggerhead Shrike
Northern Goshawk
Northern Hawk Owl
Peregrine Falcon
Pileated Woodpecker
Pinyon Jay
Preble's Shrew
Red-headed Woodpecker
Sharp-tailed Grouse
Varied Thrush
White-tailed Ptarmigan

Mammals
Bison
Canada Lynx
Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Pallid Bat
Pygmy Shrew
Spotted Bat
Townsend's Big-eared Bat
Wolverine

Reptiles
Greater Short-horned Lizard
Milksnake
Northern Alligator Lizard
Western Hog-nosed Snake
Western Skink

Conifer-dominated Forest and Woodland (xeric-mesic) Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	Work with landowners and land management agencies to develop a sustainable grazing rotation that will allow for regeneration of aspen clones Manage livestock grazing in open woodland forests
Land use change: Disease and insects Fire regime	Land use change: Disease and insects Fire regime	Encourage restoration of natural fire regime to maintain white pine, larch, and whitebark pine Provide for a range of habitat age classes to sustain preferred habitats over time Restore or mimic natural processes using prescribed burns and other management practices, where needed Support efforts to learn more about disease and insect impacts and how to mitigate them
Forest management: Conflicting management policies ORV trespass on closed roads Roads	Forest management: Conflicting management policies Increased ORV use and subsequent illegal use Roads	Active forest management (such as thinning of understory vegetation) may be needed in some cases to manage this community type over the long-term Avoid water developments up-slope from aspen stands that could negatively impact surface and ground water under the aspen stand Conduct salvage logging in fall and winter to avoid nesting seasons for avian SGCN Create snags by girdling trees when needed and in areas where snags are lacking During salvage activities, leave patches of snags rather than single snags standing

Current Impacts	Future Threats	Conservation Actions
		Educate the public and land managers about the high values of snags, mature and old growth stands , large "legacy" trees, burned forest, and large woody debris to SGCN and how to better manage these habitats Encourage restoration of natural fire regime or implement other management actions that mimic the ecological processes provided by fire Incorporate a diversity of native grasses, forbs, and shrubs appropriate for this forest type when reclaiming abandoned logging roads and other disturbed areas Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Leave large woody debris (such as logs >12 inches dbh and >6 feet long) during thinning and harvest operations; leave in piles to the extent consistent with Montana slash law (MCA 76-13-401), to mimic areas of natural blow-down Leave stringers of trees along drainages and gulches to help maintain cover for travel corridors for larger wildlife species Leave the largest and as many snags per acre as possible, when conducting commercial, thinning, or salvage harvest activities Limit or avoid spraying for spruce budworm, pine whites, and other native forest pests, except as needed around campgrounds and other special areas Maintain leaning snags when thinning forests

Current Impacts	**Future Threats**	**Conservation Actions**
		Manage aspen stands to provide a mixture of older, decadent stands and younger, rejuvenating stands Manage for a range of habitat age classes to sustain old growth forests over time Manage older high-elevation spruce-fir stands to maintain high horizontal cover Minimize salvage of burned and/or insect-killed timber in areas lacking structures that would need protection from fire or falling trees Removal of trees for mistletoe control should leave enough mistletoe "brooms" to provide nesting, roosting, and feeding areas important for some SGCN Snags in open areas vulnerable to wind throw can be cut off to leave a "high stump" of 10-20 feet tall, if suitable logging equipment can be deployed in the area When present, leave large "legacy" trees, burned or unburned, for SGCN that require large-diameter trees; trees greater than 24 inches dbh are especially valuable Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN
Powerline corridor Roads	Powerline permit Roads Utility corridors	Continue to work with local utility companies to mark power lines to reduce lethal collisions Whenever possible, install powerlines underground

Current Impacts	**Future Threats**	**Conservation Actions**
		Work with utility companies and land management agencies to find the best path for new powerlines. Existing powerline corridors or along already disturbed habitat patches such as roads or railroads is ideal
Fragmentation: Highway corridors	Fragmentation: Fences inhibiting wildlife movement Highway corridors Increasing train and vehicle traffic Increasing road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Manage road density at or below current levels Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities Pollution from urban runoff and superfund sites	Mine contamination from past mining activities New hard rock mines Pollution from urban runoff and superfund sites	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with landowners and land management agencies to limit impacts of hard rock mining on mature and old growth stands and negatively impact SGCN Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites Work with watershed groups to clean up nonpoint pollution that is negatively impacting SGCN

Current Impacts	Future Threats	Conservation Actions
Motorized use Recreation - very high at some FAS	Motorized use on logging roads Increased recreation Ski area expansions	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Work with land management agencies to ensure SGCN impacts are fully considered during recreational development
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

<u>Deciduous Dominated Forest and Woodland</u> **976,291 acres**

Ecoregions: Idaho Batholith, Northwestern Glaciated Plains, Middle Rockies, Northwestern Great Plains **1.0% landcover**

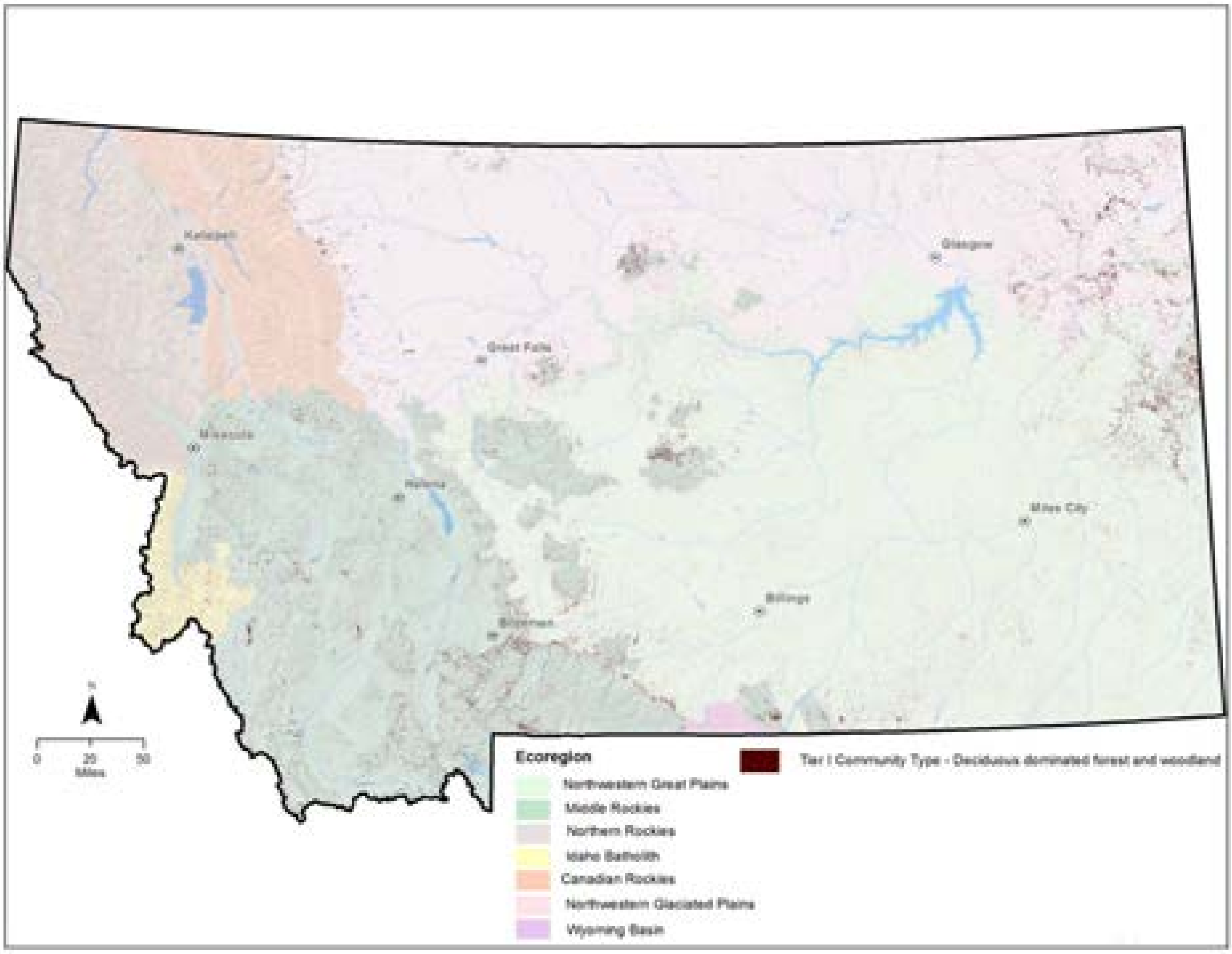

Figure 14. Distribution of Tier I Deciduous Dominated Forest and Woodland

This community type is associated with a relatively long growing season but has a cold winter with deep snow. It can be found in Montana at elevations between 3,500-9,000 feet.

The lower elevation woodlands, mostly found in the Northwestern Great Plains and Northwestern Glaciated Plains Ecoregions, are dominated by green ash (*Fraxinus pennsylvanicus*) and chokecherry (*Prunus virginiana*) and are associated with intermittent or ephemeral streams. These woody draws are very important to wildlife and domestic animals. However, this high use leads to trampling and ultimately conversion to shrubs. Alternate shade, water, and forage for cattle can help protect these draws for wildlife.

The mid and high elevation dominant species are curl-leaf mountain mahogany (*Cercocarpus ledifolius*) and quaking aspen (*Populus tremuloides*). Fire, grazing, and forestry have the greatest impact on this community type.

Associated Terrestrial SGCN

Amphibians
Plains Spadefoot
Western Toad

Birds
Alder Flycatcher
Black-billed Cuckoo
Cassin's Finch
Clark's Nutcracker
Evening Grosbeak
Ferruginous Hawk
Golden Eagle
Great Gray Owl
Green-tailed Towhee
Loggerhead Shrike
Northern Hawk Owl
Pinyon Jay
Red-headed Woodpecker
Sage Thrasher
Sharp-tailed Grouse
Spotted Bat
Veery
Yellow-billed Cuckoo

Mammals
Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Pygmy Shrew
Townsend's Big-eared Bat

Reptiles
Milksnake
Smooth Greensnake

Deciduous Dominated Forest and Woodland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	Work with landowners and land management agencies to develop a sustainable grazing rotation that will allow for regeneration of aspen, green ash, choke cherry, box elder, and development of a dense shrub and forb understory
Land use change	Land use change: Fire regime Green ash removal	Active forest management (such as thinning of understory vegetation) may be needed in some cases to manage this community type over the long-term Manage aspen stands to provide a mixture of older, decadent stands and younger, rejuvenating stands Promote aspen recruitment by building exclosures to prevent overbrowsing Remove exotic vegetation from woody draws Restore fire as a natural process in this community type, where appropriate When possible, conduct conifer removal, burning, or other habitat modifications in fall and winter, to avoid nesting seasons for avian SGCN Work with private landowners and NRCS to conserve green ash in woody draws
Forest management: Conflicting management policies Roads	Forest management: Conflicting management policies Roads	Avoid water developments upslope from aspen stands that may negatively impact hydrology under the aspen stand Conduct major harvest activities, such as road building or removal of trees, in fall and winter to avoid nesting seasons for avian SGCN

Current Impacts	Future Threats	Conservation Actions
		Incorporate a diversity of native grasses, forbs, and shrubs appropriate for this forest type when reclaiming abandoned logging roads and other disturbed areas Investigate and address threats and impacts in forest management plans on FWP-owned lands Minimize salvage of burned aspen timber Prohibit cutting aspen for firewood Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN
Development/subdivisions Roads	Development/subdivisions Roads	Work with landowners and land management agencies to limit activities (e.g., building roads in aspen stands) that may be detrimental to this community type and associated SGCN
Fragmentation: Highway corridors	Fragmentation: Highway corridors Increasing train and vehicle traffic	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities	Mine contamination from past mining activities New hard rock mines	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health
Recreation	Recreation	Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands

Current Impacts	Future Threats	Conservation Actions
Weeds	Weeds	Use mechanical or biological control within aspen stands Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Deciduous Shrubland **485,601 acres**

Ecoregions: Canadian Rockies Northern Rockies **0.5% landcover**
Idaho Batholith

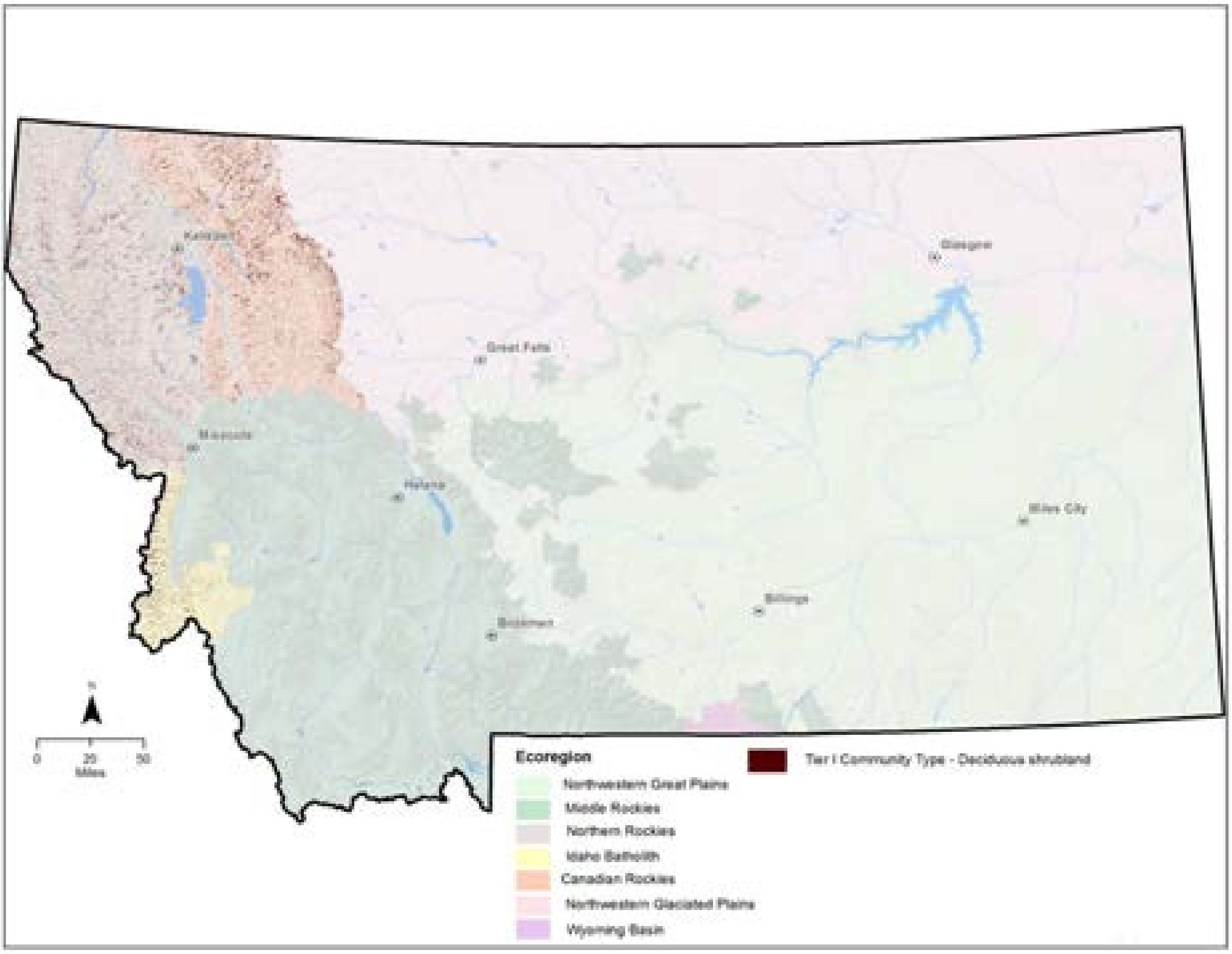

Figure 15. Distribution of Tier I Deciduous Shrubland

This community type is found throughout Montana at elevations ranging from 2,200-8,800 feet. Shrub cover is generally 30-100%. It occurs from foothills below treeline, to high alpine areas. The most common dominant shrubs include ninebark (*Physocarpus malvaceus*), bittercherry (*Prunus emarginata*), common chokecherry (*Prunus virginiana*), rose (*Rosa* spp.), smooth sumac (*Rhus glabra*), Rocky Mountain maple (*Acer glabrum*), serviceberry (*Amelanchier alnifolia*), oceanspray (*Holodiscus discolor*), rusty leaf menziesia (*Menziesia ferruginea*), black twinberry (*Lonicera involucrata*), alder buckthorn (*Rhamnus alnifolia*), prickly currant (*Ribes lacustre*), thimbleberry (*Rubus parviflorus*), sitka alder (*Alnus viridis*), cascade mountain ash (*Sorbus scopulina*), Sitka mountain ash (*Sorbus sitchensis*), and thinleaf huckleberry (*Vaccinium membranaceum*).

Fire and grazing typically drive this community type. In the absence of natural fire, prescribed burns can be used to maintain this system, though caution should be taken as some species are fire intolerant.

Associated Terrestrial SGCN

Amphibians
Western Toad

Birds
Baird's Sparrow
Clark's Nutcracker
Evening Grosbeak
Ferruginous Hawk
Golden Eagle
Gray-crowned Rosy-Finch
Green-tailed Towhee
Loggerhead Shrike
Northern Hawk Owl
Sharp-tailed Grouse
Varied Thrush
White-tailed Ptarmigan

Mammals
Bison
Canada Lynx
Dwarf Shrew
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Preble's Shrew
Pygmy Shrew
Spotted Bat
Wolverine

Reptiles
Greater Short-horned Lizard
Northern Alligator Lizard
Western Skink

Deciduous Shrubland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Poor grazing practices	Poor grazing practices	Manage livestock grazing with sufficient rest and deferment and at appropriate stocking rates and big game use/density to allow for natural growth processes and reproduction/recruitment Work with landowners and land management agencies to develop a sustainable grazing rotation that will maintain Lower Montane-Foothill shrublands
Land use change: Fire regime	Land use change: Fire regime	Educate the public about the high values of deciduous shrubland habitats and discourage killing shrubs to increase grass production Encroaching conifers can be selectively removed in places where excessive encroachment threatens this community type Protect remnant shrubs after severe fires and where necessary to allow natural recovery of a shrub community. Use planting of appropriate species only as a last resort Restoration of natural processes such as fire may help maintain some fire tolerant shrub species in this community type Severely burned sites on very steep terrain may need to be reseeded to prevent soil erosion
Forest management: ORV trespass on closed roads Roads	Forest management: Increased ORV use and subsequent illegal use Roads	Decommission and reclaim old/unused roads Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Investigate and address threats and impacts in forest management plans on FWP-owned lands

Current Impacts	**Future Threats**	**Conservation Actions**
		Manage road density at or below current levels Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN
Fragmentation: Highway corridors	Fragmentation: Highway corridors Increasing train and vehicle traffic Increasing road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Manage road density at or below current levels Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities Pollution from urban runoff and superfund sites	Mine contamination from past mining activities New hard rock mines Pollution from urban runoff and superfund sites	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites

Current Impacts	Future Threats	Conservation Actions
Motorized use Recreation - very high at some FAS	Motorized use on logging roads Increased recreation Ski area expansions	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Lowland/Prairie Grassland **19,663,104 acres**

Ecoregions: Northwestern Glaciated Plains Wyoming Basin **20.9% landcover**
Northwestern Great Plains

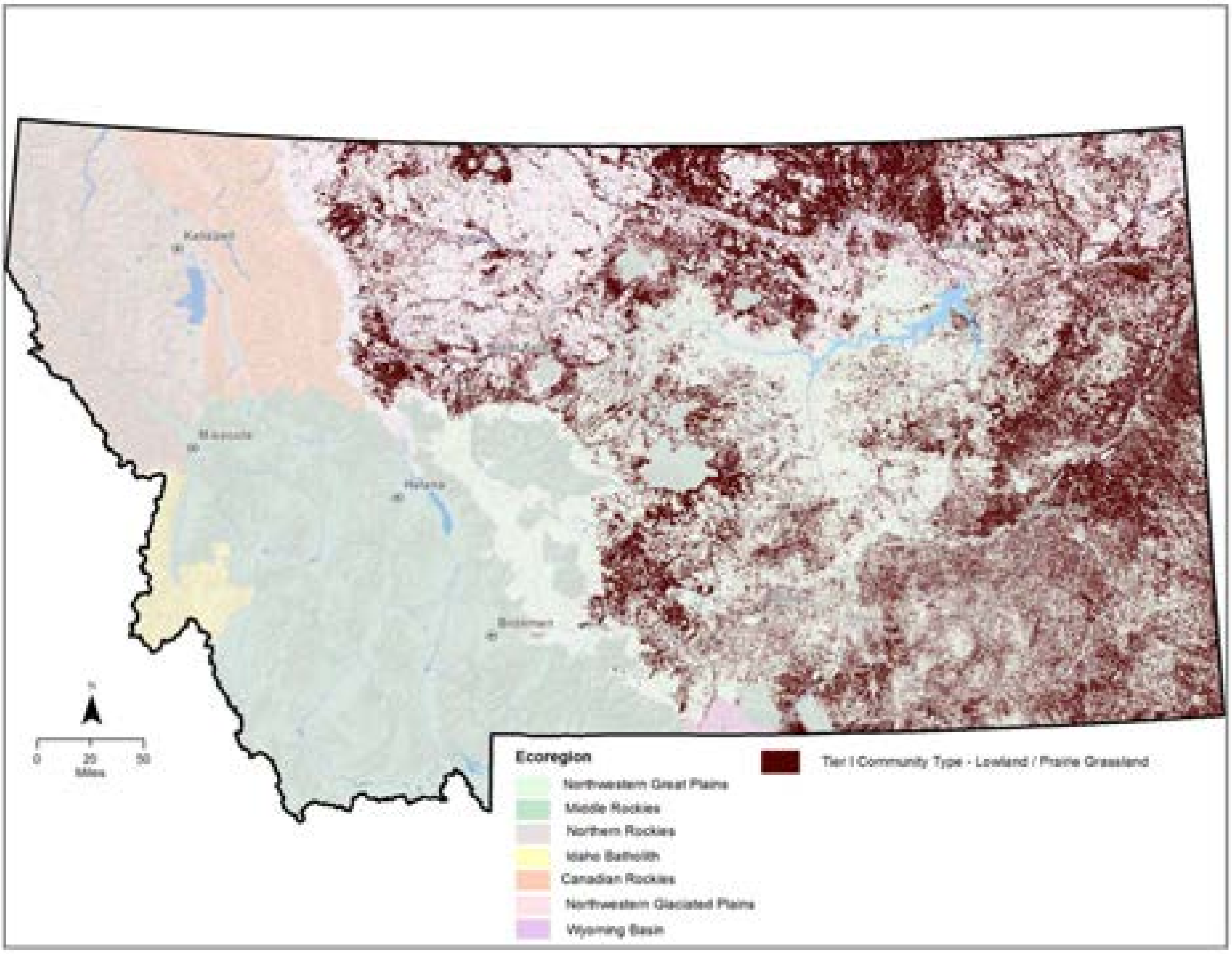

Figure 16. Distribution of Tier I Lowland/Prairie Grassland

The system covers much of the eastern two-thirds of Montana, occurring continuously for hundreds of square miles, interrupted only by wetland/riparian areas. Grasses typically comprise the greatest canopy cover. Forb diversity is typically high. Wind erosion, fire, and grazing constitute the other major dynamic processes that can influence this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics increase in dominance; rhizomatous species have been shown to markedly decrease species diversity. Previously cultivated acres that have been re-vegetated with non-native plants have been transformed into associations such as Kentucky bluegrass (*Poa pratensis*) and western wheatgrass *(Pascopyrum smithii)* or into pure crested wheatgrass (*Agropyron cristatum)* stands.

Historically, frequent indigenous anthropogenic fires and large numbers of migrating bison and other herbivores contributed to plant species and plant community diversity within this system. In the Northern Great Plains, pre-settlement fire frequency occurred at intervals ranging from 3 to 20 years (Umbanhowar 1996). The elimination of bison and frequent fire intervals disrupted plant community dynamics, leading to a decrease in plant community diversity. Typically, this community is tolerant of managed grazing practices, moderate-intensity fires, and fallowed wheat-cropping practices. Prolonged, extreme drought is a major threat to this system, reducing the density and cover of short grasses by as much as 80% and the bunchgrasses and native forbs to almost zero (Albertson 1937). During prolonged drought, native forbs are rapidly replaced by non-native invasive forbs. During the severe droughts of the 1930's and 1950's, basal area cover of grasses decreased from 80 to less than 10% under moderate grazing regimes in 3 to 5 years (Barbour 2000). In short, the dynamics of species changes in this system is a function of climate, but the magnitude of these changes is greatly influenced by the intensity of grazing and fire frequency. The distribution, species richness and productivity of plant species within this community are controlled primarily by environmental conditions, in particular the temporal and spatial distribution of soil moisture and topography. Another important aspect of this system is its susceptibility to wind erosion. Blowouts and sand draws can impact vegetation composition and succession within this system; fire and grazing constitute the other major disturbances. Overgrazing, fire, and trampling that leads to the removal of vegetation in areas susceptible to blowouts can either instigate a blowout or perpetuate blowouts occurring within the system.

Areas that have been disturbed by previous cultivation or overgrazing may support large numbers of invasive or non-native plant species. Control of these species can occur through managed grazing practices, chemicals, or biological mechanisms such as insects or fire. In the absence of fire, regions of the mixed grass prairie may be susceptible to woody plant or cacti invasion. Controlled burning practices every 4 years can control plant expansion. Landowners looking to manage for wildlife may choose to burn less often than livestock managers, promoting availability of woody vegetation for wildlife species. Grazing should be managed to avoid instigation and perpetuation of blowouts and vegetation loss within this system. Prescribed fires can also be used to enhance, maintain, and restore this system.

Associated Terrestrial SGCN

Amphibians
Great Plains Toad
Plains Spadefoot

Birds
Baird's Sparrow
Bobolink
Burrowing Owl
Chestnut-collared Longspur
Ferruginous Hawk
Golden Eagle
Loggerhead Shrike
Long-billed Curlew
McCown's Longspur
Mountain Plover
Sharp-tailed Grouse
Sprague's Pipit

Mammals
Black-tailed Prairie Dog
Dwarf Shrew
Fringed Myotis
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Spotted Bat
Swift Fox
Townsend's Big-eared Bat

Reptiles
Greater Short-horned Lizard
Milksnake
Western Hog-nosed Snake

Lowland/Prairie Grassland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Poor grazing practices	Poor grazing practices	Provide comments to BLM on Range Management Plans (RMP), grazing allotments plans, and other habitat related management plans Utilize funding opportunities to work with landowners to develop grazing systems that will reduce impacts to this community type and associated SGCN
Land use change: Conversion of native habitat to cropland agriculture Loss of acres enrolled in the Conservation Reserve Program (CRP) Removal of keystone species through poisoning	Land use change: Conversion of native habitat to cropland agriculture Fire regime Loss of CRP Potential removal of keystone species through a plague event	Conduct controlled burns to manage native grassland habitat and SGCN Promote CRP or CRP-like programs and limit native grassland conversion to cropland agriculture Reestablish native vegetation where opportunities exist
	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes Support research efforts on selective control for cheatgrass

Current Impacts	Future Threats	Conservation Actions
		When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Albertson, F. W. 1937. Ecology of Mixed Prairie in West Central Kansas. *Ecological Monographs.* 7 (4): 481-547.

Barbour, M. G. 2000. North American terrestrial vegetation. Cambridge: Cambridge University Press.

Umbanhowar, C. E. 1996. Recent Fire History of the Northern Great Plains. *American Midland Naturalist.* 135 (1): 115-121.

<u>Montane Grassland</u> **6,938,195 acres**

Ecoregions: Canadian Rockies, Idaho Batholith, Middle Rockies, Northern Rockies, Northwestern Glaciated Plains, Northwestern Great Plains **7.4% landcover**

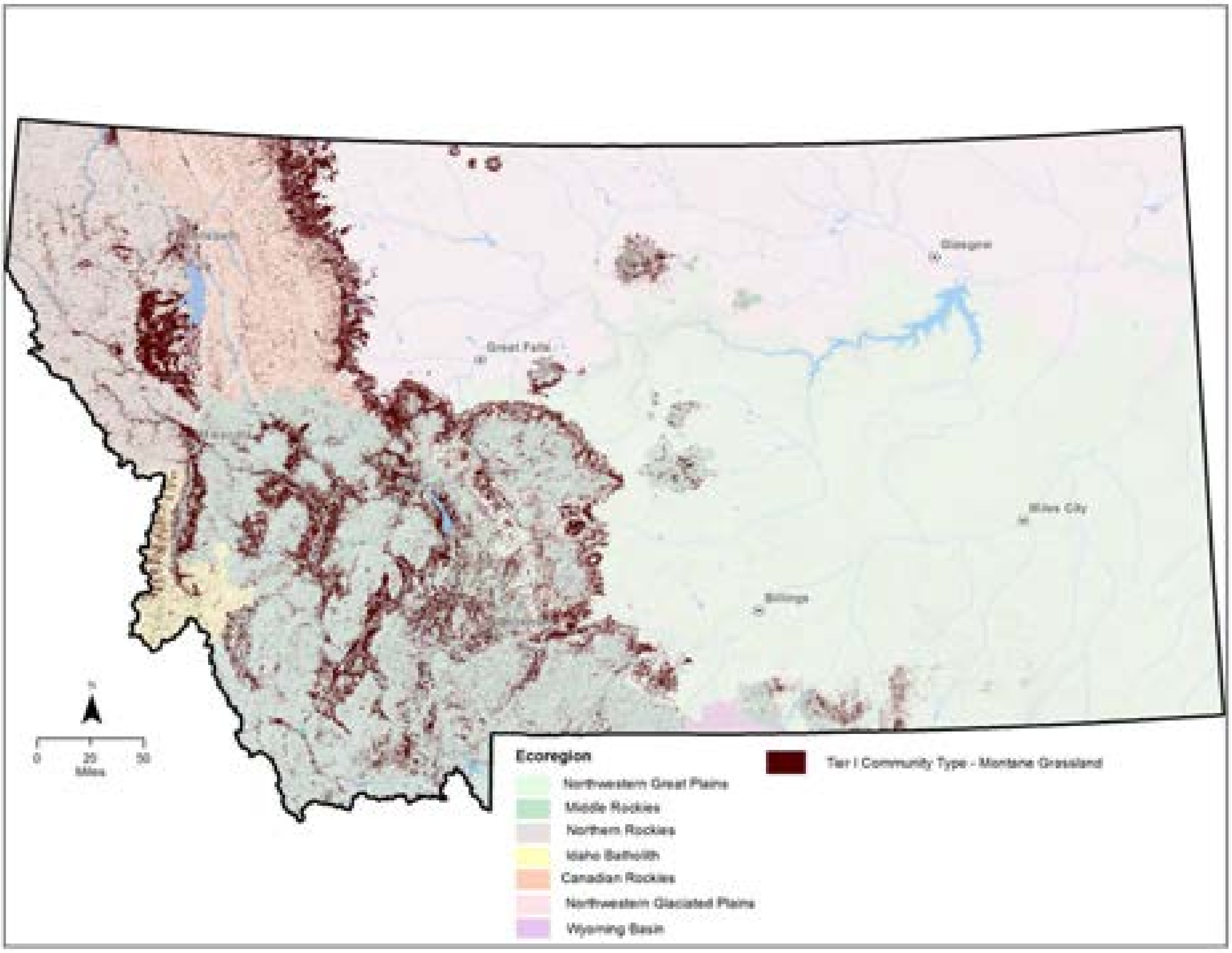

Figure 17. Distribution of Tier I Montane Grassland

This community type is found at elevations ranging from 1,800-8,800 feet in Montana. Below 5,400 feet, the grassland is generally dominated by rough fescue (*Festuca campestris*), Idaho fescue (*Festuca idahoensis*), or bluebunch wheatgrass (*Pseudoroegneria spicata*). Above this, the grasslands are dominated by a variety of grasses or forbs.

This system is susceptible to shrub encroachment and invasive weeds, especially if there is overgrazing and/or fire suppression. Prescribed burns and proper grazing management can help maintain this system.

Associated Terrestrial SGCN

Amphibians
Plains Spadefoot
Western Toad

Birds
Baird's Sparrow
Bobolink
Clark's Nutcracker
Ferruginous Hawk
Golden Eagle
Great Gray Owl
Green-tailed Towhee
Loggerhead Shrike
Long-billed Curlew
Northern Hawk Owl
Peregrine Falcon

Mammals
Bison
Dwarf Shrew
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Preble's Shrew
Pygmy Shrew
Townsend's Big-eared Bat
Wolverine

Reptiles
Greater Short-horned Lizard
Milksnake
Northern Alligator Lizard
Western Skink

Montane Grassland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Poor grazing practices	Poor grazing practices	Manage for a range of grazing intensity across a landscape, to provide for a range of SGCN needs (e.g., intensive grazing for mountain plovers and less grazing for sharp-tailed grouse) Provide escape ramps in stock tanks to prevent drowning of small mammals and birds Where appropriate, develop watering sites on un-used and/or lightly grazed areas adjacent to montane grasslands Work with landowners and land management agencies to implement rotational grazing, based on appropriate stocking rates, that incorporates seasonal deferment and yearlong rest grazing treatments of sufficient frequency to support native perennial plant survival, vigor, and reproduction and will minimize impacts to SGCN
Land use change: Conversion of native habitat to cropland agriculture Fire regime	Land use change: Conversion of native habitat to cropland agriculture Fire regime	Determine the need for reseeding and/or resource management after wildland fires; monitor site for noxious weeds Encourage restoration of natural fire regime Encroaching conifers can be selectively removed in places where excessive encroachment threatens this community type Establish or encourage montane grassland habitat improvement projects to benefit SGCN Reestablish native vegetation where opportunities exist Where feasible, conduct controlled burns to manage native montane grassland habitat and SGCN

Current Impacts	Future Threats	Conservation Actions
		Work with landowners and DNRC to minimize additional conversions to cultivation agriculture
Forest management: Conflicting management policies ORV trespass on closed roads	Forest management: Conflicting management policies Increased ORV use and subsequent illegal use	Decommission and reclaim old/unused roads Encourage restoration of natural fire regime or implement other management actions that mimic the ecological processes provided by fire Manage for a mosaic pattern and variation in grass sward and shrub height to benefit a variety of SGCN Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Manage road density at or below current levels Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN
Development/subdivisions Powerline corridor Roads	Development/subdivisions Powerline permit Utility corridors	Continue to work with local utility companies to mark power lines to reduce lethal collisions Whenever possible, install powerlines underground Work with utility companies and land management agencies to find the best path for new powerlines. Use of existing powerline corridors is ideal or along already disturbed habitat patches such as roads or railroads

Current Impacts	**Future Threats**	**Conservation Actions**
Fragmentation: Highway corridors	Fragmentation: Fences inhibiting wildlife movement Highway corridors Increasing train and vehicle traffic Increasing road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Manage road density at or below current levels Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities	Mine contamination from past mining activities New hard rock mines	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health
Recreation	Increased recreation Motorized use on logging roads	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species

Current Impacts	Future Threats	Conservation Actions
		Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes Support research efforts on selective control for cheatgrass When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Sagebrush Steppe & Sagebrush-Dominated Shrubland **15,864,748 acres**

Ecoregions: Middle Rockies, Northwestern Great Plains, Northwestern Glaciated Plains, Wyoming Basin **16.9% landcover**

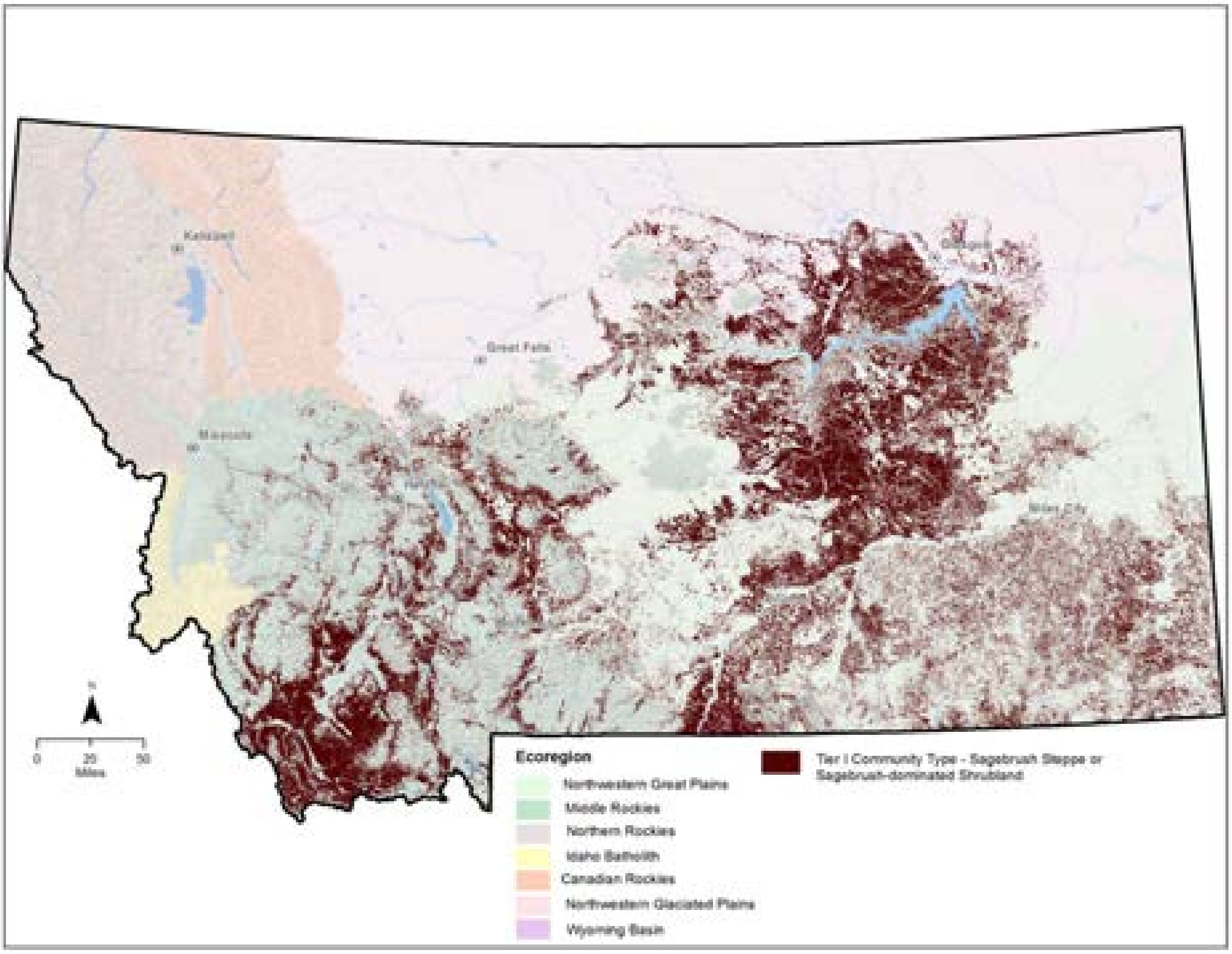

Figure 18. Distribution of Tier I Sagebrush Steppe & Sagebrush-dominated Shrubland

This community type is dominated by Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*), mountain big sagebrush (*A. t. ssp. vaseyana*), or black sage (*A. nova*). Shrub cover varies from 10-50%, and the cover of perennial grasses and forbs is generally over 25%.

The elevation where this type is found is between 2,200-10,500 feet. In some areas, this steppe community is in a disclimax condition because of historic and current overgrazing.

Proper grazing can be used to maintain the steppe character. As a general rule, fire is not a tool for maintaining sagebrush species because they are easily killed at all fire intensities and they only reproduce by seed. Cheatgrass invasion tends to be more likely in areas where perennial grasses and forbs are stressed or reduced; this can be tied to overgrazing. Fire also can be a catalyst for expanded cheatgrass invasion.

Associated Terrestrial SGCN

Amphibians
Great Plains Toad
Plains Spadefoot
Western Toad

Birds
Brewer's Sparrow
Burrowing Owl
Ferruginous Hawk
Golden Eagle
Greater Sage-Grouse
Green-tailed Towhee
Loggerhead Shrike
Mountain Plover
Sage Sparrow
Sage Thrasher
Sharp-tailed Grouse

Mammals
Bison
Black-tailed Prairie Dog
Dwarf Shrew
Fringed Myotis
Great Basin Pocket Mouse
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Pygmy Rabbit
Spotted Bat
Townsend's Big-eared Bat
White-tailed Prairie Dog

Reptiles
Greater Short-horned Lizard
Milksnake
Western Hog-nosed Snake

Sagebrush Steppe & Sagebrush-Dominated Shrubland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Poor grazing practices	Poor grazing practices	Provide escape ramps in stock tanks to prevent drowning of small mammals and birds Work with landowners and land management agencies to develop a sustainable grazing rotation that will provide healthy grasses and forbs between sagebrush plants
Land use change: Conversion of native habitat to cropland agriculture Fire regime Removal of keystone species through poisoning	Land use change: Conversion of native habitat to cropland agriculture Fire regime Potential elimination of keystone species through plague Reduction of sagebrush grassland from conifer encroachment	Determine the need for reseeding and/or resource management after wildland fires; monitor site for noxious weeds and control as needed Encourage converting expired CRP into grazing lands and allow these habitats to return to a sagebrush steppe character Encroaching conifers can be selectively removed in places where excessive encroachment threatens this community type; mechanical treatment should be the primary approach, but where the canopy becomes overly dense, fire may be an appropriate tool Establish or encourage habitat improvement projects to benefit SGCN Follow habitat manipulation guidelines set out in the *Management Plan and Conservation Strategies for Sage Grouse in Montana – Final* (Montana Sage Grouse Work Group 2005) Maintain ground squirrel and prairie dog colonies, and maintain small mammal populations as prey for many bird and mammal species Reestablish native vegetation where opportunities exist Reestablish the balance between shrub cover and perennial grass and forb cover (for more details follow Paige and Ritter 1999)

Current Impacts	**Future Threats**	**Conservation Actions**
		Reseed cheatgrass dominated land with native grasses, forbs, and shrubs Reseed former winter range with appropriate sagebrush, native grasses, and native forbs Restoration should focus on restoring or rehabilitating degraded and/or disturbed sites back to a to a healthy native plant community Work with landowners to develop a plan for minimal control of prairie dogs and/or use non-toxic methods of control
Land management: Conflicting management policies Illegal ORV trespass Roads	Land management: Conflicting management policies Increased ORV use and subsequent illegal use Roads	Decommission and reclaim old/unused roads Follow habitat manipulation guidelines set out in the *Management Plan and Conservation Strategies for Sage Grouse in Montana – Final* (Montana Sage Grouse Work Group 2005) Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Manage road density at or below current levels Work with private landowners, non-governmental organizations, and land management agencies to help ensure work plans or practices have minimal effect on native sagebrush steppe habitats and associated SGCN

Current Impacts	Future Threats	Conservation Actions
Development/subdivisions Powerline corridor Roads	Development/subdivisions Powerline permit Utility corridors	Continue to work with local utility companies to mark power lines to reduce lethal collisions Investigate and promote landowner incentives to keep large blocks of land intact Whenever possible, install powerlines underground Work with utility companies and land management agencies to find the best path for new powerlines. Use of existing powerline corridors is ideal or along already disturbed habitat patches such as roads or railroads
Mine contamination from past mining activities	Mine contamination from past mining activities New hard rock mines	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health
Motorized use Recreation	Motorized use Increased recreational use	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes

Current Impacts	Future Threats	Conservation Actions
		Support research efforts on selective control for cheatgrass When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary
	Fragmentation: Fences inhibiting wildlife movement Increasing train and vehicle traffic	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills

Additional Citations

Montana Sage Grouse Work Group. 2005. Management plan and conservation strategies for greater sage-grouse in Montana- Final Montana Sage Grouse Work Group. 200 pp.

Paige, C., and S. A. Ritter. 1999. Birds in a sagebrush sea: managing sagebrush habitats for bird communities. Partners in Flight Western Working Group, Boise, Idaho.

<u>Scrub and Dwarf Shrubland</u> **16,587 acres**
Ecoregion: Wyoming Basin **0.02% landcover**

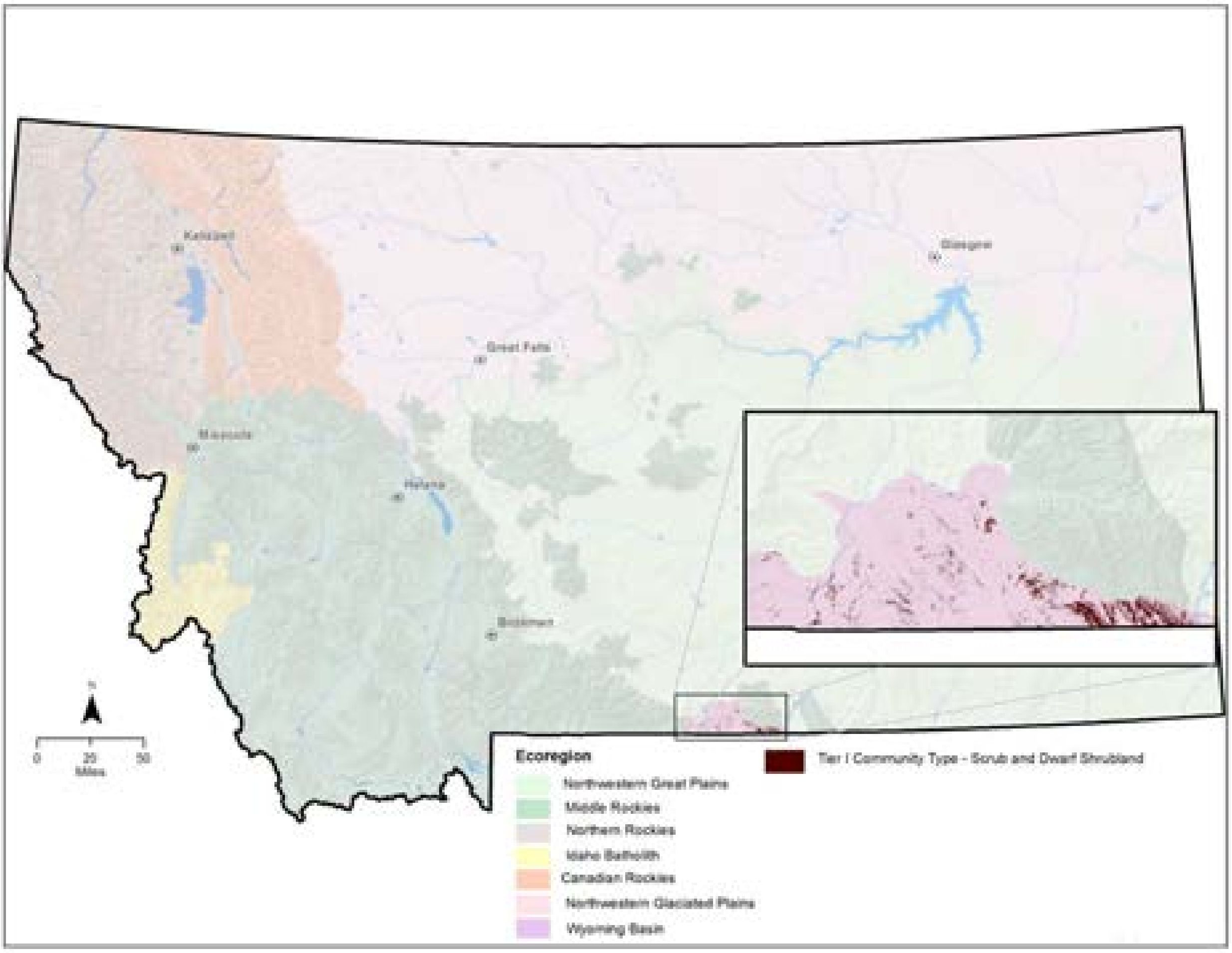

Figure 19. Distribution of Tier I Scrub and Dwarf Shrubland

This community type occurs on gentle slopes, rolling plains, to the steep-facing badlands in south-central and south-eastern portions of the state. It is a shrub dominated community and forb cover is generally very low. This community type faces extreme climatic conditions, with warm to hot summers and freezing winters. The annual precipitation is generally 12 inches or less, and it normally occurs as spring rains and sometimes during late summer or fall.

Fire has been rare in this system due to the low plant cover. Excessive grazing, particularly by sheep, can significantly impact the cover of the principal shrub species, leading to an increase of cheatgrass and exotic annual forbs which results in the decline of the native perennial grasses in this system. Areas infested with cheatgrass cause the dynamics of this community type to change and increases the fire potential.

Associated Terrestrial SGCN

Amphibians
Plains Spadefoot

Birds
Brewer's Sparrow
Burrowing Owl
Chestnut-collared Longspur
Ferruginous Hawk
Golden Eagle
Greater Sage-Grouse
Loggerhead Shrike
Mountain Plover
Sage Sparrow
Sharp-tailed Grouse

Mammals
Black-tailed Prairie Dog
Fringed Myotis
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Spotted Bat
Townsend's Big-eared Bat
White-tailed Prairie Dog

Reptiles
Greater Short-horned Lizard
Milksnake
Western Hog-nosed Snake

Scrub and Dwarf Shrubland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes Support research efforts on selective control for cheatgrass When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management

SPECIES OF GREATEST CONSERVATION NEED

There are 127 SGCN (Appendix N), but conservation actions only were developed for 47 as they had a State Rank of S1 or S2. The latter includes 5 amphibians, 14 birds, 16 fish, 8 mammals, one mussel, and 3 reptiles. While these 47 species were chosen to focus conservation efforts, it is not implied that projects that address other SGCN (i.e., species with a State Rank of S3) are excluded.

The maps in this section were developed from the Montana Field Guide (MNHP and FWP 2013a) and the Point Observation Database. Please note that some species may have no or few observations identified. This may not be a true representation of them within Montana as the observations only may be incidental as no formal survey has ever been conducted.

INVERTEBRATES

The number of invertebrates in Montana is unknown, but likely to be in the thousands. Eighty-five are considered SOC (MNHP and FWP 2013b). This SWAP only reviewed 2 species groups for inclusion consideration, crayfish and mussels. FWP and most of the partner agencies and organizations do not have the ability, capacity, or funding to properly address invertebrates and include them in this SWAP. Because many of the conservation actions identified use a landscape or habitat approach, many of the SOC invertebrates will benefit from actions taken. A list of invertebrate SOC can be found in Appendix O.

<u>Mussels</u>

<u>Western Pearlshell</u> (*Margaritifera falcata*) State Rank: S2
Global Rank: G4G5

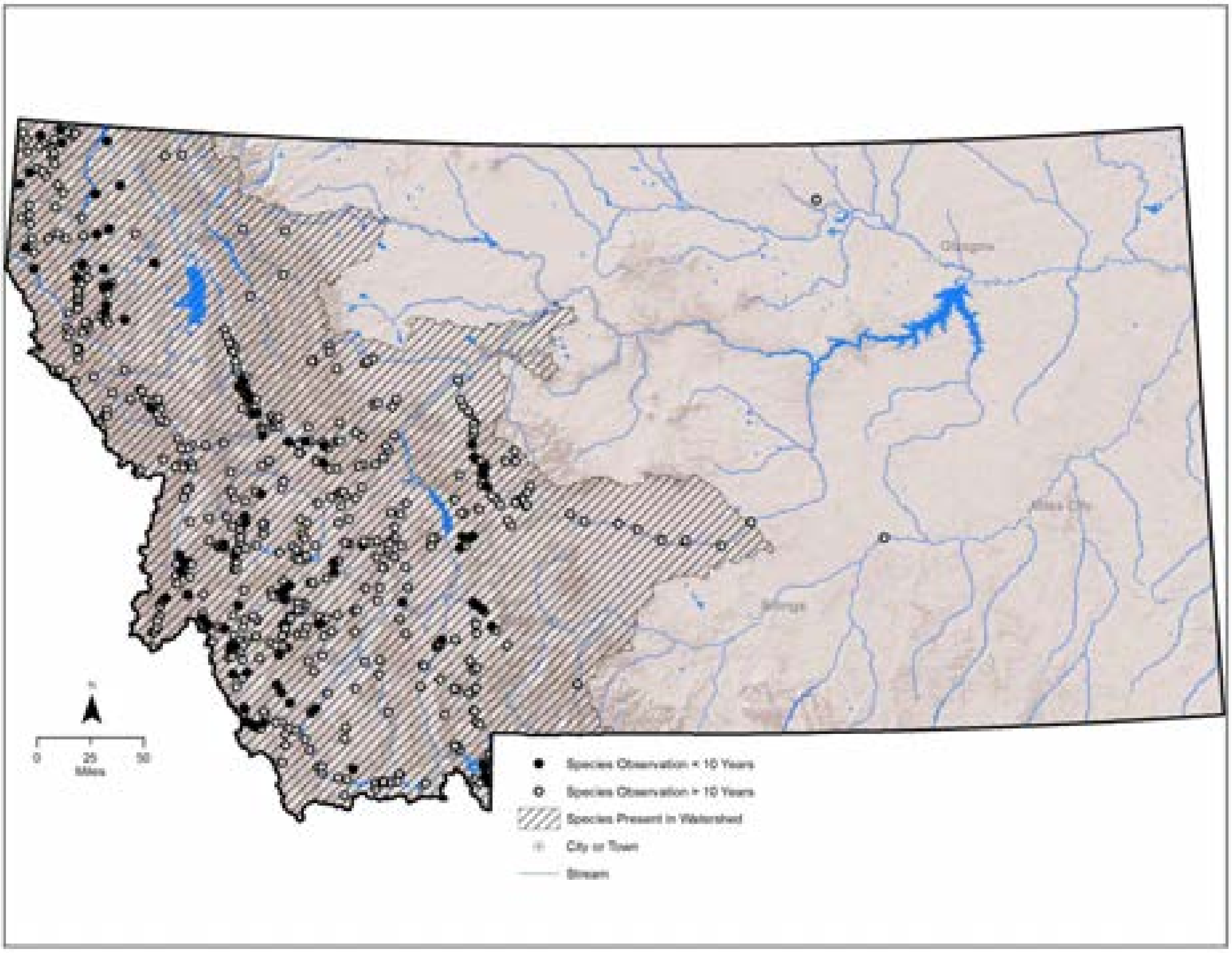

Figure 20. Montana range and observations of the western pearlshell

<u>Habitat</u>

The species is found in cool and cold running streams that generally have a low to moderate gradient and are wider than 6.6 feet; preferable habitat is stable sand or gravel substrates. It is found in hard as well as soft water. In large Idaho river systems (Salmon and Clearwater River Canyons), the western pearlshell, attains maximum density and age in river reaches where large boulders structurally stabilize cobbles and interstitial gravels. Boulders tend to prevent significant bed scour during major floods, and these boulder-sheltered mussel beds, although rare, may be critical for population recruitment elsewhere within the river, especially after periodic flood scour of less protected mussel habitat. In Idaho's Salmon and Snake River canyon, where reaches are aggrading with sand and gravel, the western pearlshell is being replaced by *Gonidea angulata*.

The normal fish hosts in the area are probably the *Oncorhynchus* species (e.g., Chinook salmon, WCT, steelhead), but *Salmo* and *Salvelinus* and even *Rhinicthys* and *Catostomus* (dace and suckers) are reported to be suitable. The western pearlshell likely crossed the divide with the

WCT, which is the native salmonid of the upper Missouri River drainage. This species occurs in sand, gravel, and even between cobbles and boulders.

Management

The western pearlshell has become a Sensitive Species for the USFS in 2010, and has been ranked at risk (S2) in Montana since 2008. Montana's populations have shown dramatic declines (Stagliano 2010) and were downgraded to S2 from S2S4 after more intensive sampling in 2007 and 2008 documented few viable populations in the state (Stagliano 2010). This species is widespread in geographic areas, but is declining in terms of area occupied and the number of sites with viable individuals; populations showing repeated reproduction (at least several age classes) are now the exception rather than the rule (Frest and Johannes 1995, Stagliano 2010). Individuals of this species can be quite long-lived and populations could exist undetected at low levels for many years without any reproduction.

Management Plan

None for western pearlshell, but documents with identified actions and strategies exist for host fish westslope cutthroat, Yellowstone cutthroat, and bull trout. In addition, a statewide fisheries management plan was developed for Montana, and actions identified within could help western pearlshells persist.

Western Pearlshell Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Habitat degradation and fragmentation (e.g., dams, stream channelization, diversions, dredging, and dewatering) Stream deterioration because of high sediment loads	Habitat degradation and fragmentation (e.g., dams, stream channelization, diversions, dredging, and dewatering) Stream deterioration because of high sediment loads	Support land use practices that encourage minimizing sedimentation from runoff (example, stream setbacks) Restoration of stream channels, streambanks, riparian areas to a condition that simulates their natural form and function
Invasive mussels, specifically zebra and quagga	Invasive mussels, specifically zebra and quagga	Follow guidance in *Montana's Aquatic Nuisance Species (ANS) Management Plan* (2002) and updates or revisions to the plan
No management plan	No management plan	Develop management plan or incorporate species recommendations into other management plans

Current Impacts	Future Threats	Conservation Actions
Point and nonpoint source pollution Reduced dissolved oxygen content in water	Point and nonpoint source pollution Reduced dissolved oxygen content in water	Enforcement of regulations that address the dumping of pollutants into waterways Work with agencies, organizations and the public to identify point source pollution that reduces dissolved oxygen contents in water
Threats to host fish also jeopardize mussel survival	Threats to host fish also jeopardize mussel survival	Restore connectivity of habitat and manage for healthy populations of native fish including cutthroat trout and bull trout
	Climate change	Encourage forest management practices that maintain healthy canopy cover over streams to stabilize temperature

Additional Citations

Frest, T. J. and E. J. Johannes. 1995. Freshwater Mollusks of the Upper Sacramento System, California, with Particular Reference to the Cantara Spill. 1994 Yearly report to California Department of Fish & Game. Deixis Consultants, Seattle, Washington. iii + 88 pp., appendices. Contract #FG2106R1.

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan Final. 148 pp.

Stagliano, David. 2010. Freshwater mussels in Montana: comprehensive results from 3 years of State Wildlife Grant funded surveys. Montana Natural Heritage Program, Helena, Montana. 75 pp.

VERTEBRATES

There are 528 vertebrate species that have been documented in Montana, of which 485 are native. Of the native species, there are 4 that have been extirpated and 195 are migratory and do not live in Montana year round. One hundred and forty-five accidental or rare visitors to Montana (all birds) were not included in the above numbers.

As of 13 December 2013, 126 SGCN were identified, and of those 46 have a state rank of S1 or S2. Conservation actions were developed only for those 46 SGCN. A few of those SGCN's, however, have ranges that barely cross into Montana. Though these species have been identified as SGCN, conservation efforts may be better focused elsewhere if there is no known significant threat to these species throughout the majority of their range outside of Montana.

There are 10 species on the SGCN list that are considered Species of Greatest Inventory Need (SGIN) as well. These species may be on the SGCN list because their Montana distribution, status, and threats are unknown. If a species below was identified as a SGIN, it is indicated under the common and scientific names.

Amphibians

Coeur d'Alene Salamander (*Plethodon idahoensis*) State Rank: S2
Species of Greatest Inventory Need Global Rank: G4

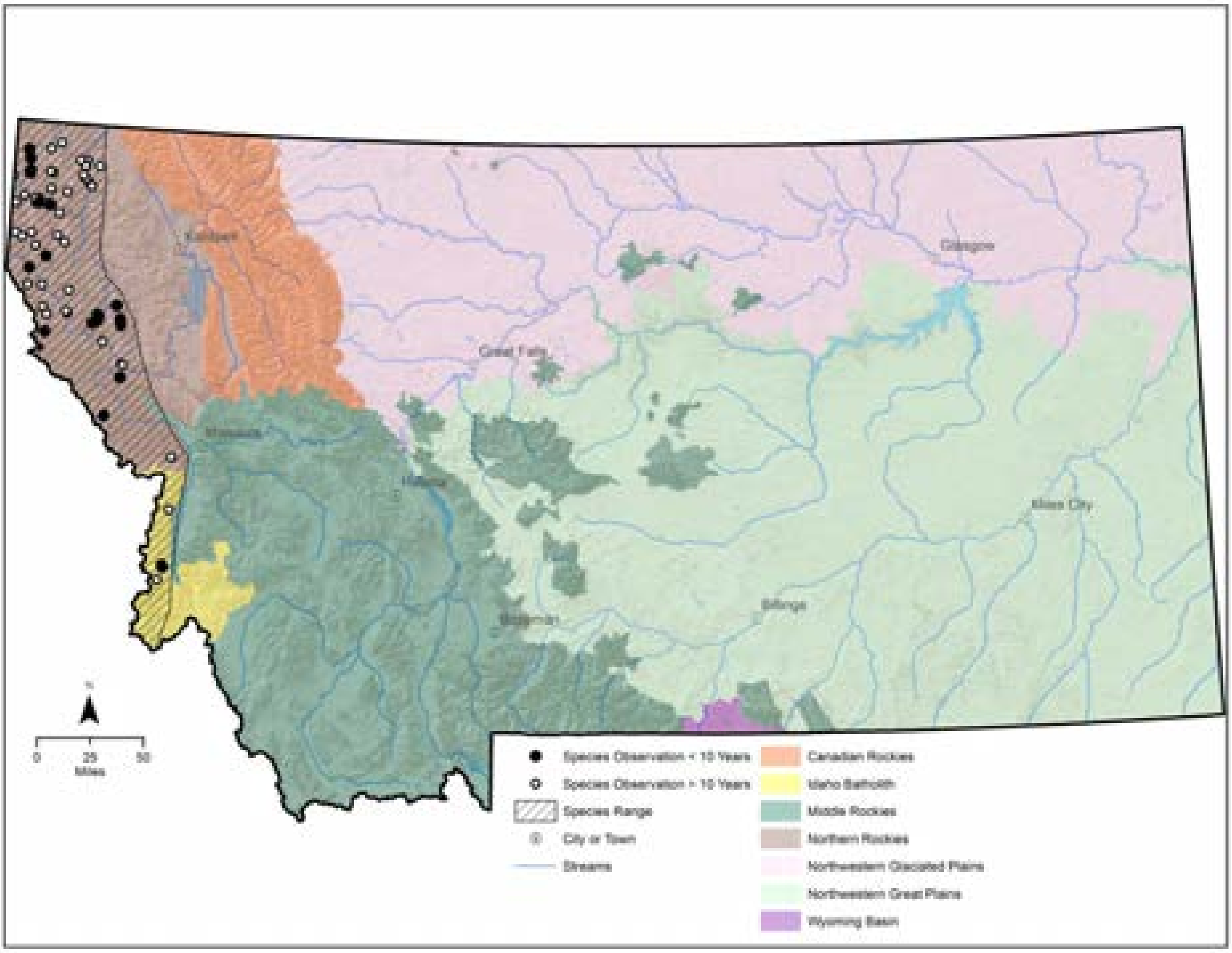

Figure 21. Montana range and observations of the Coeur d'Alene salamander

Habitat

The habitat for Coeur d'Alene salamanders includes the 3 major habitat categories: springs and seeps, waterfall spray zones, and stream edges (Wilson et al. 1988; Werner and Reichel 1994; Boundy 2001; Maxell 2002). Specific primary habitats are seeps and streamside talus, but they also inhabit talus far from free water (deep talus mixed with moist soil on well-shaded north-facing slopes). Coeur d'Alene salamander occurrences are generally located in coniferous forests, but are not restricted to a particular overstory species or aspect (Groves 1988, Groves et al. 1996). In wet weather, they are also found in leaf litter and under bark and logs in coniferous forests.

All plethodontid salamanders respire through their skin; terrestrial species lose water to the environment through evaporation and are therefore restricted to cool, damp environments. Coeur d'Alene salamanders are closely tied to water and are considered among the most aquatic plethodontids (Brodie and Storm 1970). Because they may live in the harshest climate of any northwestern plethodontid (Nussbaum et al. 1983), they are highly dependent on the thermal and hydrologic stability provided by wet habitats in otherwise inhospitable surroundings.

Sites occupied by Coeur d'Alene salamanders in Montana have fractured rock formations present, and nearby habitats are typically forested (Reichel and Flath 1995). Foraging areas include seepage areas and splash zones with high humidity, high substrate moisture, and relatively high temperatures (Wilson and Larsen 1988). Shelter is provided by deep bedrock fractures or in talus habitat (Wilson and Larsen 1988). Montana populations are found primarily in talus areas along splash zones of creeks, or with seeps running through (Teberg 1963, 1965; Wilson and Larsen 1988). Idaho and Montana populations breed in both spring and fall, although most eggs usually are laid in the spring. Eggs are laid in moist, concealed places on land (Stebbins 1985) far down in the rocks (Werner and Reichel 1994).

Management

Potential threats for the species across its global range also apply to Montana populations, but population declines or extinctions have not yet been documented here. Some populations continue to be vulnerable to highway construction activity, and most populations occur at elevations and in forest types where timber harvest is a common activity. Routine monitoring (Groves et al. 1996) of known populations should be conducted to identify threats to each, as well as to determine their continued viability.

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Coeur d'Alene Salamander Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Data poor Outdated survey		Conduct monitoring program to establish long-term trends of abundance and distribution of populations Routine monitoring of known populations Target species for survey and inventory
Disease and parasites	Disease and parasites	Prevent spread of chytrid fungus by following process described in Maxell et al. (2004)

Current Impacts	Future Threats	Conservation Actions
Mining	Mining	Keep new mining tailings out of drainages Reclaim streams impacted by dredge mining Work with companies to minimize mining impacts in occupied streams
Non-native species	Non-native species	Avoid stocking non-native fish in nearby waters Coordinate closely with fisheries conservation efforts in these areas
Pollution	Pollution	Minimize pesticide use upstream from occupied areas Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands
Restricted mobility coupled with increasing habitat fragmentation make the Coeur d'Alene salamander susceptible to local extirpation	Restricted mobility coupled with increasing habitat fragmentation make the Coeur d'Alene salamander susceptible to local extirpation	Conduct surveys of potential habitats for the Coeur d'Alene salamander Replace culverts with bridges when possible Work with private landowners and land management agencies to conserve habitat through proper management of development, logging, and chemical applications
Road construction	Road construction	Minimize road construction upstream or within 300 feet of known salamander sites Survey drainages for salamanders or habitat prior to new road construction
Forest management	Forest management	Work with landowners and land management agencies to limit activities that may be detrimental to this species

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

Boundy, J. 2001. Herpetofaunal surveys in the Clark Fork Valley region, Montana. Herpetological Natural History 8: 15-26.

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Maxell, B. A., G. Hokit, J. Miller, and K. Werner. 2004. Detection of (*Batrachochytrium dendrobatidis*), the Chytrid Fungus Associated with Global Amphibian Declines, in Montana Amphibians. PowerPoint presentation.

Nussbaum, R. A., E. D. Brodie, Jr., and R. M. Storm. 1983. Amphibians and reptiles of the Pacific Northwest. University Press of Idaho.

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Stebbins, R. C. 1985. Peterson Field Guides: Western Reptiles and Amphibians. Houghton Mifflin Company, Boston, Massachusetts.

Teberg, E. K. 1963. An extension into Montana of the known range of the salamander *Plethodon vandykei idahoensis*. Herpetologica 19:287.

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Werner, J. K., and J. D. Reichel. 1994. Amphibian and reptile survey of the Kootenai National Forest: 1994. Montana Natural Heritage Program, Helena, Montana. 105 pp.

Wilson, A. G. Jr. and J. H. Larsen Jr. 1988. Activity and diet in seepage-dwelling Coeur d'Alene salamanders (*Plethodon vandykei idahoensis*). Northwest Science 62(5): 211-217.

Great Plains Toad (*Anaxyrus cognatus*) State Rank: S2
Global Rank: G5

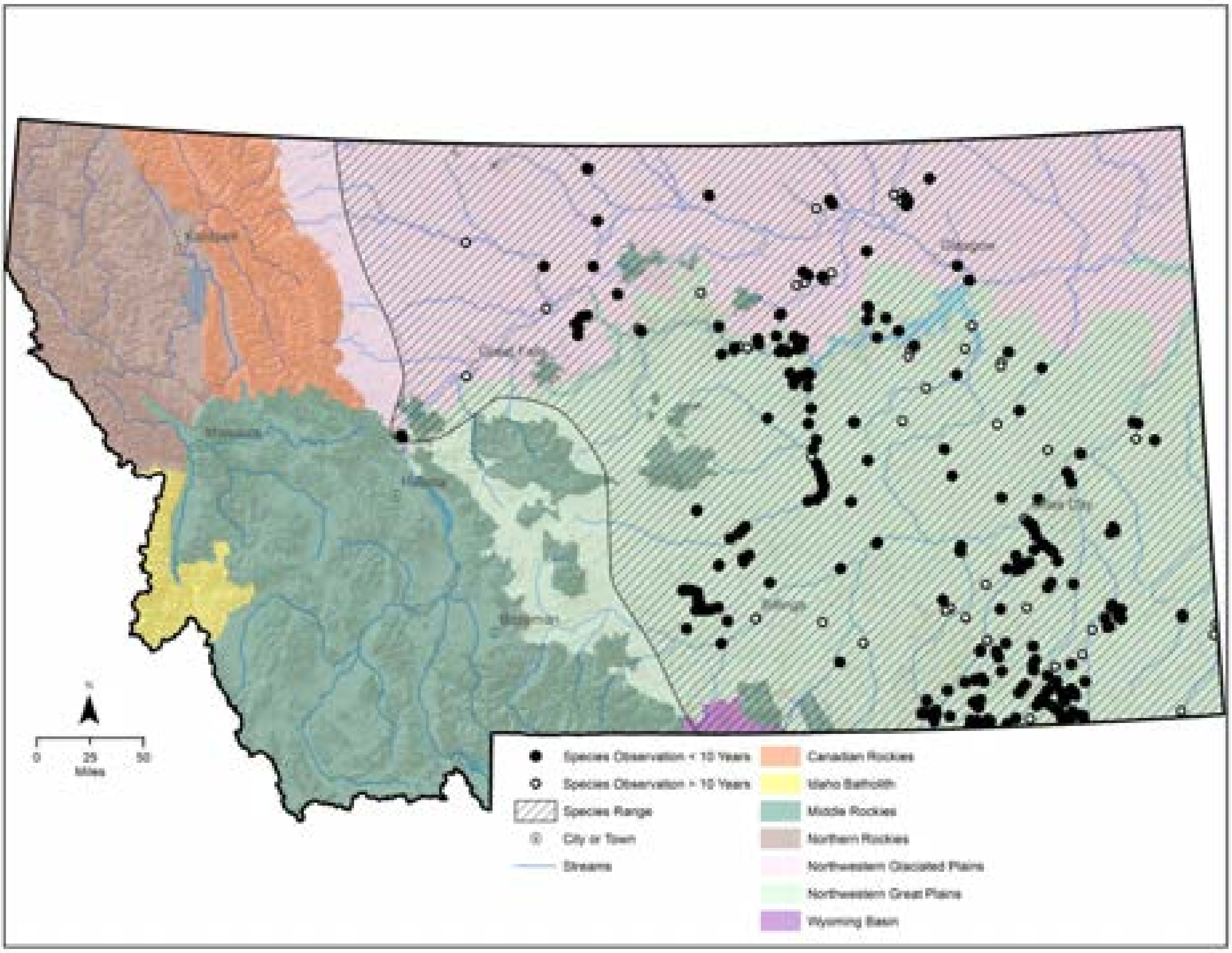

Figure 22. Montana range and observations of the Great Plains toad

Habitat

Little specific information on the habitat of Great Plains toad is available. It has been reported from sagebrush-grassland, rainwater pools in road ruts, in stream valleys, at small reservoirs and stock ponds, and around rural farms. Breeding has been documented in small reservoirs and backwater sites along streams (Mosimann and Rabb 1952, Dood 1980, Hendricks 1999).

Information gathered from other locations indicates that when inactive, the Great Plains toad is found in burrows, and under rocks or wood. During the active season, it occupies burrows during the day that are quite shallow. This species enters water only to breed. It breeds in rain pools, flooded areas, and ponds and reservoirs that fluctuate in size, and appears to prefer stock tanks and roadside ponds rather than floodplains (Baxter and Stone 1985). Eggs and larvae develop in shallow water, usually clear or slightly turbid, but not muddy.

Management

No special management needs are currently recognized. However, at permanent and semi-permanent water bodies (reservoirs and stock ponds) where breeding has been observed, portions of the shoreline with emergent vegetation could be fenced to create exclosures that protect breeding adults, eggs and tadpoles from trampling and the removal of emergent cover by livestock. Another option would be the creation of ponds designed for use by prairie amphibians as breeding sites, with the perimeter surrounded by fencing to prevent access by livestock. Game fish should not be introduced to any of these ponds.

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Great Plains Toad Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Breeding site destruction	Breeding site destruction	Protect certain wetlands occupied by great plains toads from introduced species and human disturbance Manage livestock access to known breeding sites within grazing allotments Survey road ditches for tadpoles before any blading of ditches in June/July Survey wetlands suitable for great plains toads
Disease and parasites	Disease and parasites	To prevent spread of chytrid fungus, personnel working in either lentic or lotic systems should thoroughly rinse and decontaminate all equipment as described in Maxell et al. (2004)
Pollution	Pollution	Minimize pesticide use upstream from occupied areas Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands

Additional Citations

Baxter, G. T., and M. D. Stone. 1985. Amphibians and reptiles of Wyoming, second edition. Wyoming Game and Fish Department. Cheyenne, Wyoming.

Dood, A. R. 1980. Terry Badlands nongame survey and inventory final report. Montana Department of Fish, Wildlife & Parks and Bureau of Land Management, Helena, Montana. 70 pp.

Hendricks, P. 1999. Amphibian and reptile survey of the Bureau of Land Management Miles City District, Montana. Montana Natural Heritage Program, Helena, Montana. 80 p.

Hendricks, P. 1999. Amphibian and reptile surveys on Montana refuges: 1998-1999. Montana Natural Heritage Program, Helena, Montana. 22pp.

Maxell, B. A., G. Hokit, J. Miller, and K. Werner. 2004. Detection of (*Batrachochytrium dendrobatidis*), the Chytrid Fungus Associated with Global Amphibian Declines, in Montana Amphibians. PowerPoint presentation.

Mosimann, J. E. and G. B. Rabb. 1952. The herpetology of Tiber Reservoir Area, Montana. Copeia 1952: 23-27.

Idaho Giant Salamander (*Dicamptodon aterrimus*) State Rank: S2
Global Rank: G3

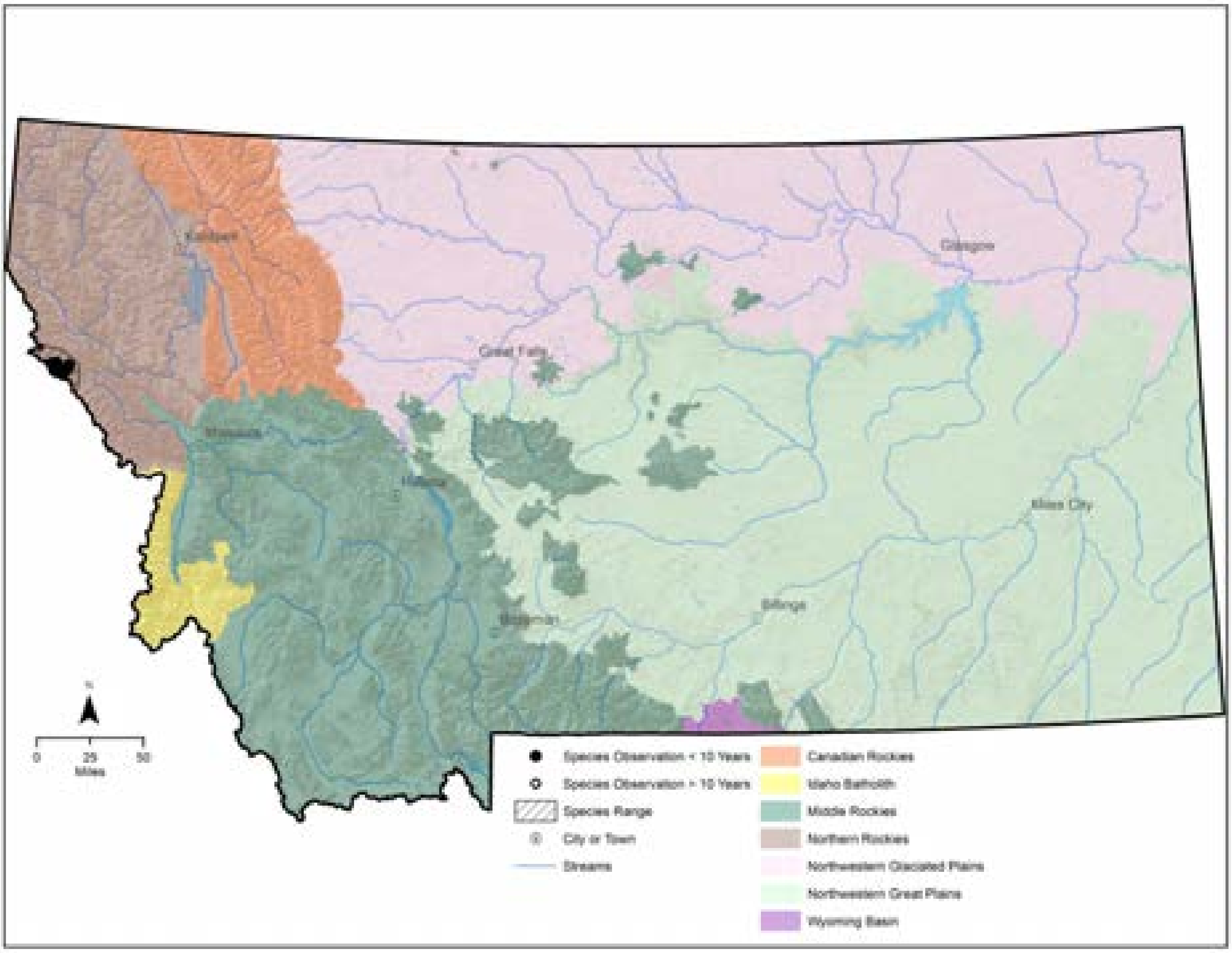

Figure 23. Montana range and observations of the Idaho giant salamander

Habitat

Known to occur up to 7,100 feet in elevation (Nussbaum et al. 1983). Transformed adults, although seldom seen, inhabit moist coniferous forests where they may be found under logs, bark, or rocks. They are most active on warm, rainy nights. Larvae are usually found in swift, cold mountain streams, but may occasionally be found in lakes or ponds (Reichel and Flath 1995).

Management

Potential threats for the species across its global range probably apply also to Montana populations. Population declines or extinctions have not yet been documented, in part because the species was documented in Montana only once prior to 2005. All records are from headwaters streams and lake outlets in Mineral County. Range likely reduced during the last century from logging of mature and old-growth forest types, wildland fire, road building, and placer mining. Routine monitoring of known populations should be conducted to identify threats to each, as well as to determine their continued viability. Additional stream surveys are desirable to determine connectivity with adjacent Idaho populations, especially between Thompson Falls and Lolo Pass (Maxell et al. 2009).

<u>Management Plan</u>
Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Idaho Giant Salamander Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Disease and parasites	Disease and parasites	To prevent spread of chytrid fungus, personnel working in either lentic or lotic systems should thoroughly rinse and decontaminate all equipment as described in Maxell et al. (2004)
Pollution	Pollution	Minimize pesticide use upstream from occupied areas Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands
Restricted mobility coupled with increasing habitat fragmentation makes this species susceptible to local extirpation	Restricted mobility coupled with increasing habitat fragmentation makes this species susceptible to local extirpation	Conduct surveys of potential habitats for the Idaho giant salamander Replace culverts with bridges when possible Work with Idaho to maintain connectivity with populations across the state line Work with private landowners and land management agencies to conserve habitat through proper management of development, logging, and chemical applications

Current Impacts	**Future Threats**	**Conservation Actions**
Road construction	Road construction	Minimize road construction upstream or within 300 feet of known salamander sites Survey drainages for salamanders or habitat prior to new road construction
Forest management	Forest management	Work with landowners and land management agencies to limit activities that may be detrimental to this species
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations
	Mining	Keep new mining tailings out of drainages Reclaim streams impacted by dredge mining Work with companies to minimize mining impacts in occupied streams
	Non-native species	Coordinate closely with fisheries conservation efforts in these areas Monitor streams for non-native species, and install barriers if feasible to prevent spread into headwater areas

Additional Citations

Maxell, B.A., P. Hendricks, M.T. Gates, and S. Lenard. 2009. Status and Conservation of Montana's Amphibians and Reptiles: summaries of distribution and habitat use, review of risk factors, species accounts, bibliographies for individual species, research and management suggestions, and a summary of lentic breeding amphibian surveys. Report to Montana Department of Fish, Wildlife & Parks, Region One Office of the U.S. Forest Service, Montana Department of Environmental Quality, and USGS Northern Rocky Mountain Science Center. Montana Natural Heritage Program, Helena, Montana and Montana Cooperative Wildlife Research Unit and Wildlife Biology Program, University of Montana, Missoula, Montana. 554 p. plus appendices.

Maxell, B. A., G. Hokit, J. Miller, and K. Werner. 2004. Detection of (*Batrachochytrium dendrobatidis*), the Chytrid Fungus Associated with Global Amphibian Declines, in Montana Amphibians. PowerPoint presentation.

Nussbaum, R. A., E. D. Brodie, Jr., and R. M. Storm. 1983. Amphibians and reptiles of the Pacific Northwest. University of Idaho Press. Moscow, Idaho. 332 pp.

Reichel, J. and D. Flath. 1995. Identification of Montana's amphibians and reptiles. Montana Outdoors 26(3):15-34.

Northern Leopard Frog (*Rana pipiens*) State Rank: S1, S4
Global Rank: G5

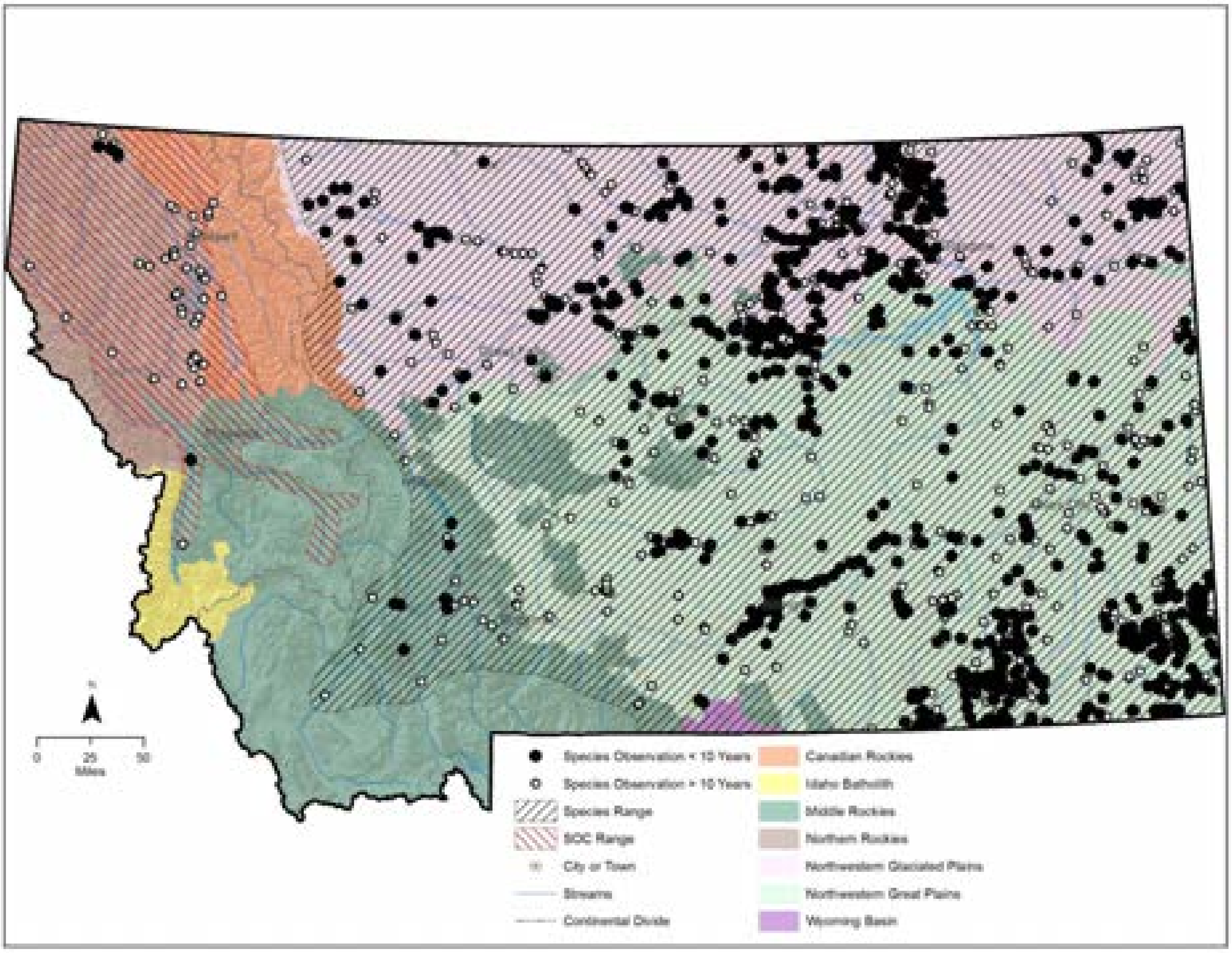

Figure 24. Montana range and observations of the northern leopard frog

Habitat

Habitats used by northern leopard frogs in Montana include low-elevation and valley bottom ponds, spillway ponds, beaver ponds, stock reservoirs, lakes, creeks, pools in intermittent streams, warm water springs, potholes, and marshes (Brunson and Demaree 1951; Mosimann and Rabb 1952; Black 1969; Miller 1978; Dood 1980; Reichel 1995; Hendricks and Reichel 1996; Hendricks 1999).

Northern leopard frogs require a mosaic of habitats to meet annual requirements of all life stages. They occupy a variety of wetland habitats of relatively fresh water with moderate salinity, including springs, slow streams, marshes, bogs, ponds, canals, floodplains, beaver ponds, reservoirs, and lakes, usually in permanent water with rooted aquatic vegetation. Adults and juveniles commonly feed in open or semi-open wet meadows and fields with shorter vegetation, usually near the margins of water bodies where there is permanent water and growth of cattails or other aquatic vegetation, yet they may forage far from water in damp meadows (Stebbins 1985). They seek cover underwater and seem to avoid denser vegetation.

This species is abundant on plains near permanent water (Black 1969; Mosimann and Rabb 1952), tends to avoid tall, dense grass areas (Miller 1978), and prefers densely vegetated areas such as wet sedge meadows or cattail marshes (Reichel and Flath 1995; Werner and Reichel 1994).

Management
No special management needs are currently recognized for populations in eastern Montana. Any populations discovered in the western region should be reported to the native species biologist of FWP or the program zoologist of MNHP.

Management Plan
Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Northern Leopard Frog Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Disease and parasites	Disease and parasites	To prevent spread of chytrid fungus, personnel working in either lentic or lotic systems should thoroughly rinse and decontaminate all equipment as described in Maxell et al. (2004)
Global change (climatic and atmospheric changes such as increased UV-B radiation, pollution, acid rain, and disease)	Climate change	Begin monitoring program to establish long-term trends of abundance and distribution of populations Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary
Loss of wetlands and hydrological regimes	Loss of wetlands and hydrological regimes	Support habitat conservation and improvement projects Work with landowners and land management agencies to limit activities that may be detrimental to this species and wetlands

Current Impacts	**Future Threats**	**Conservation Actions**
Non-native species (e.g., game fish, mosquitofish, bullfrogs)	Non-native species (e.g., game fish, mosquitofish, bullfrogs)	Allow no introduction of game fish or bullfrogs into waters with known breeding sites Coordinate closely with fisheries conservation efforts in these areas Remove bullfrogs from isolated wetlands with northern leopard frog habitat Suppress the spread of bullfrogs
Pollution	Pollution	Minimize pesticide use upstream from occupied areas Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands
Range contraction: this species has nearly vanished on western side of Continental Divide in Montana	Range contraction: this species has nearly vanished on western side of Continental Divide in Montana	Protect the 2 remaining breeding populations west of the Continental Divide in Montana Survey western Montana to locate additional populations Monitor historical breeding sites and populations Support ongoing reintroduction efforts
Unsustainable use and illegal collecting	Unsustainable use and illegal collecting	Increase education and information on amphibian biology and awareness of the importance of breeding sites

Additional Citations

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Hendricks, P. 1999. Amphibian and reptile surveys on Montana refuges: 1998-1999. Montana Natural Heritage Program, Helena, Montana. 22pp.

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Miller, J. D. 1978. Observations on the diet of *Rana pretiosa*, *Rana pipiens*, and *Bufo boreas* from western Montana. Northwestern Science 52:243–249.

Mosimann, J. E. and G. B. Rabb. 1952. The herpetology of Tiber Reservoir Area, Montana. Copeia 1952: 23-27.

Reichel, J. D. 1995. Preliminary amphibian and reptile survey of the Lewis and Clark National Forest: 1994. March 1995.

Reichel, J. D., and D. Flath. 1995. Identification of Montana's amphibians and reptiles. Montana Outdoors 26:15–34.

Stebbins, R. C. 1985. Peterson Field Guides: Western Reptiles and Amphibians. Houghton Mifflin Company, Boston, Massachusetts.

Werner, J. K., and J. D. Reichel. 1994. Amphibian and reptile survey of the Kootenai National Forest: 1994. Montana Natural Heritage Program, Helena, Montana. 105 pp.

Western Toad (*Bufo boreas*) State Rank: S2
Global Rank: G4

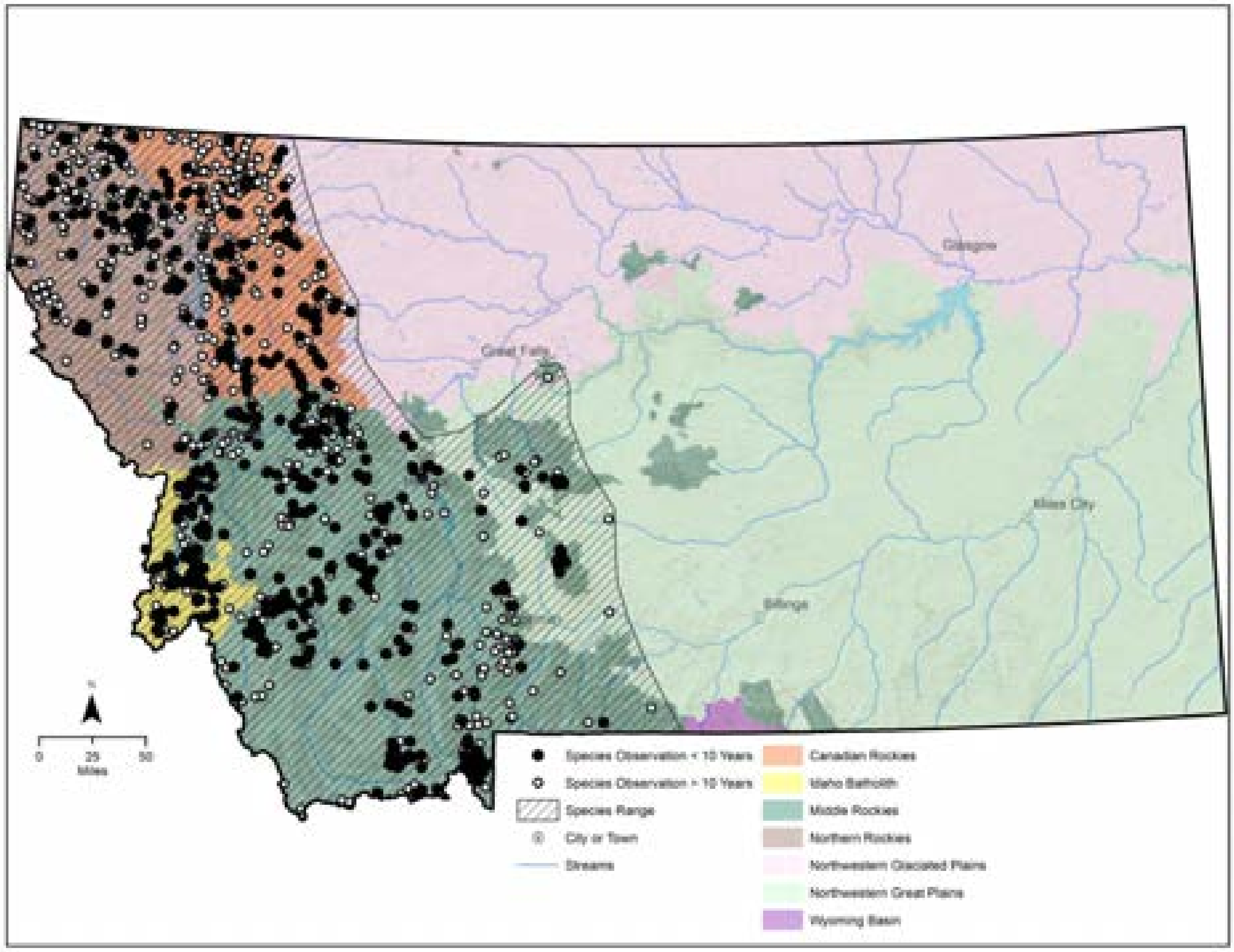

Figure 25. Montana range and observations of the western toad

Habitat

Habitats used by western toads in Montana are similar to those reported for other regions and range from low-elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes to high-elevation ponds, fens, and tarns at or near tree line (Rodgers and Jellison 1942; Brunson and Demaree 1951; Miller 1978; Marnell 1997; Werner et al. 1998; Boundy 2001). Forest cover in or near encounter sites is often unreported, but toads have been noted in open-canopy ponderosa pine woodlands and closed-canopy dry conifer forests in Sanders County (Boundy 2001), willow wetland thickets and aspen stands bordering Engelmann spruce stands in Beaverhead County (Jean et al. 2002), and mixed ponderosa pine/cottonwood/willow sites or Douglas-fir/ponderosa pine forests in Ravalli and Missoula counties.

Elsewhere the western toad is known to utilize a wide variety of habitats, including desert springs and streams, meadows and woodlands, mountain wetlands, beaver ponds, marshes, ditches, and backwater channels of rivers where they prefer shallow areas with mud bottoms (Nussbaum et al. 1983; Baxter and Stone 1985; Russell and Bauer 1993; Koch and Peterson

1995; Hammerson 1999). Forest cover around occupied montane wetlands may include aspen, Douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir; in local situations western toads may also be found in ponderosa pine forest. They also occur in urban settings, sometimes congregating under streetlights at night to feed on insects (Hammerson 1999). Normally they remain fairly close to ponds, lakes, reservoirs, and slow-moving rivers and streams during the day, but may range widely at night. Eggs and larvae develop in still, shallow areas of ponds, lakes, or reservoirs or in pools of slow-moving streams, often where there is sparse emergent vegetation. Adult and juvenile western toads dig burrows in loose soil, use burrows of small mammals, or occupy shallow shelters under logs or rocks. At least some toads overwinter in terrestrial burrows or cavities, apparently where conditions prevent freezing (Nussbaum et al. 1983; Koch and Peterson 1995; Hammerson 1999).

Management

In previous decades the western toad was considered the most abundant amphibian of the western third of the state (Rodgers and Jellison 1942; Brunson 1952; Maxell et al. 2003), and although still encountered widely and frequently though by no means commonly, it is no longer ranked as the most abundant amphibian. Numerous surveys since the early 1990s indicate that this species has experienced regional population declines in the state. Western toads were documented to breed at only 2-5% of more than 2,000 standing water bodies surveyed since 1997, and where breeding was documented, fewer than 10 breeding females contributed in a given year (Maxell 2000; Maxell et al. 2003). Rangewide declines in this species have been indicated in Montana as well as in other western states.

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

Western Toad Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Breeding site destruction	Breeding site destruction	Explore using beaver in areas where they historically occupied to provide additional breeding sites for the western toad; follow FWP's existing protocol on translocation Manage livestock access to known breeding sites within grazing allotments Protect certain wetlands occupied by western toads from introduced species and human disturbance Support habitat conservation and

Current Impacts	Future Threats	Conservation Actions
		improvement projects Survey road ditches for tadpoles before any blading of ditches in June/July Survey wetlands suitable for western toads
Connectivity	Connectivity	Explore installation of underpasses to access breeding areas
Disease and parasites	Disease and parasites	To prevent spread of chytrid fungus, personnel working in either lentic or lotic systems should thoroughly rinse and decontaminate all equipment as described in Maxell et al. (2004)
Pollution	Pollution	Minimize pesticide use upstream from occupied areas Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands
Predation increase by species attracted to human disturbance	Predation increase by species attracted to human disturbance	Appropriate conservation action(s) unknown

Additional Citations

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Boundy, J. 2001. Herpetofaunal surveys in the Clark Fork Valley region, Montana. Herpetological Natural History 8: 15-26.

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<u>Birds</u>
(The distribution reflects a species' entire range and does not discriminate between breeding and nonbreeding areas.)

<u>Black Rosy-Finch</u> (*Leucosticte atrata*) State Rank: S2
Species of Greatest Inventory Need Global Rank: G4

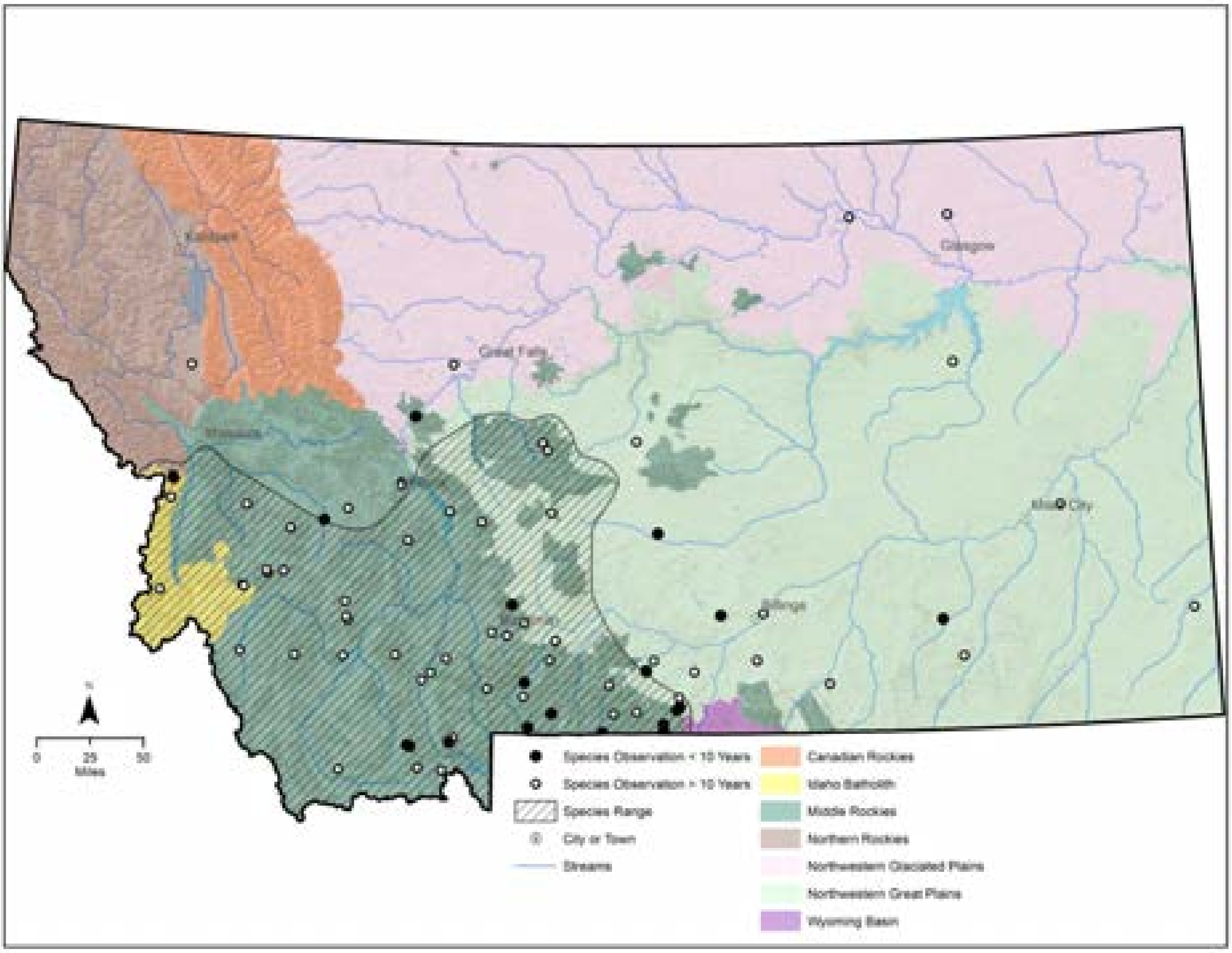

Figure 26. Montana range and observations of the black rosy-finch

<u>Habitat</u>
Habitat use in Montana has not been studied, but is similar to other regions (P. Hendricks personal observation), where black rosy-finches are known to nest in crevices in cliffs and talus among glaciers and snowfields above timberline (also possibly in abandoned buildings above treeline) and forage in barren, rocky or grassy areas adjacent to the nesting sites; in migration and winter they also occur in open situations, fields, cultivated lands, brushy areas, and around human habitation (American Ornithologists Union 1998, Johnson 2002). They may roost in mine shafts or similar protected sites. During some winters individuals move out onto the shortgrass and mid-grass prairies to feed (Hendricks and Swenson 1983, Johnson 2002).

<u>Management Plan</u>
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Black Rosy-Finch Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Data poor - inadequate monitoring Outdated survey		Encourage citizen data collection in winter & data entry via Ebird or other appropriate publicly shared outlets Examine Christmas Bird Count data for trends in wintering populations Set up and periodically run alpine bird surveys during the breeding season to monitor changes in distribution and population Search for winter roost sites - determine if they need protection (e.g. open mine shafts) Target species for survey and inventory Use location data and habitat layer to derive a list of high priority breeding sites to visit
Human disturbance	Human disturbance	If winter roost sites are identified as threatened by human activities consider management options (e.g. gate mine shafts instead of sealing them)
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations
	Wind energy development	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep)

Additional Citations

American Ornithologists' Union. 1998. Check-list of North American birds. 7th edition. American Ornithologists' Union, Washington, D.C.

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Montana Fish, Wildlife & Parks. *In Prep*. Fish and Wildlife Recommendations for Wind Energy Development in Montana.

<u>Black Swift</u> (*Cypseloides niger*) State Rank: S1B
Species of Greatest Inventory Need Global Rank: G4

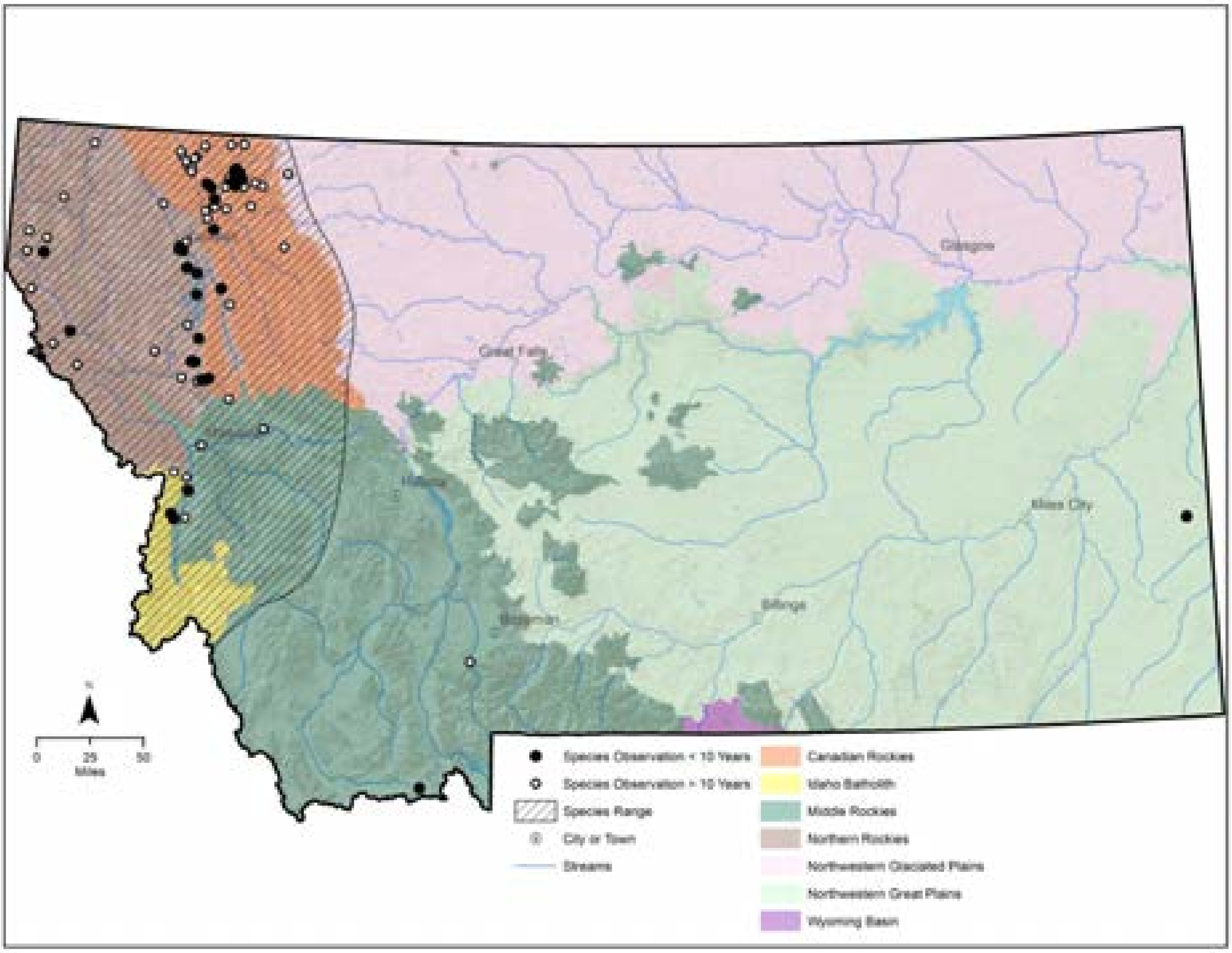

Figure 27. Montana range and observations of the black swift

<u>Habitat</u>

No specific information regarding black swift habitat exists for Montana. Information from other regions indicates they forage over forests and in open areas. They nest behind or next to waterfalls and wet cliffs (Michael 1927, Knorr 1961, Foerster and Collins 1990), on sea cliffs and in sea caves (Vrooman 1901, Legg 1956), and occasionally in limestone caves (Davis 1964). Nests are located in dark, inaccessible sites with an unobstructed flight path (Knorr and Knorr 1990). Nest site persistence and tenacity is almost absolute (Knorr and Knorr 1990). The nest is a cup-like structure of mud, mosses and algae.

<u>Management</u>

No active management currently is in place for black swifts in Montana. Although decreases in water flow and increased recreational use in areas where black swifts nest, or are thought to nest, should be discouraged (Casey 2000).

<u>Management Plan</u>

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Black Swift Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Data poor - very few breeding records Lacks a baseline survey		Develop a list of potential waterfall nesting sites and survey Microhabitats suitable for black swifts need to be identified, mapped, and surveyed Monitor site occupancy periodically to determine trends Target species for survey and inventory
Altered stream flows due to upstream impacts	Altered stream flows due to upstream impacts	Encourage watershed management practices upstream of suitable waterfalls to maintain habitat quality throughout the nesting season
Dewatering	Dewatering	If known nest sites or waterfalls with a high likelihood of being occupied are threatened by dewatering, work with upstream managers and water-rights holders to maintain adequate stream flows throughout the nesting season
Human disturbance at waterfall nesting sites	Increased recreation	Consider limiting access and certain types of activities when known to be disturbing to nest sites Evaluate human access at known nesting sites
Impacts to riparian zones	Impacts to riparian zones	Protect known and high probability nesting sites and streams
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Davis, D. G. 1964. Black Swifts nesting in a limestone cave in Colorado. Wilson Bull. 76:295-296.

Foerster, K. S. and C. T. Collins. 1990. Breeding distribution of the black swift in southern California. W. Birds 21:1-9.

Knorr, O. A. 1961. The geographical and ecological distribution of the black swift in Colorado. Wilson Bull. 73(2):155-170.

Knorr, O. A., and M. S. Knorr. 1990. The black swift in the Chiricahua Mountains of Arizona. Southwest Nat. 35:559-560.

Legg, K. 1956. A sea-cliff nest of the Black Swift. Condor 58:183-187.

Michael, C. M. 1927. Black Swift nesting in Yosemite National Park. Condor 29:89-97.

Vrooman, A. G. 1901. Discovery of the egg of the black swift (*Cypseloides niger borealis*). Auk 18:394-395.

Blue-gray Gnatcatcher (*Polioptila caerulea*) State Rank: S2B
Global Rank: G5

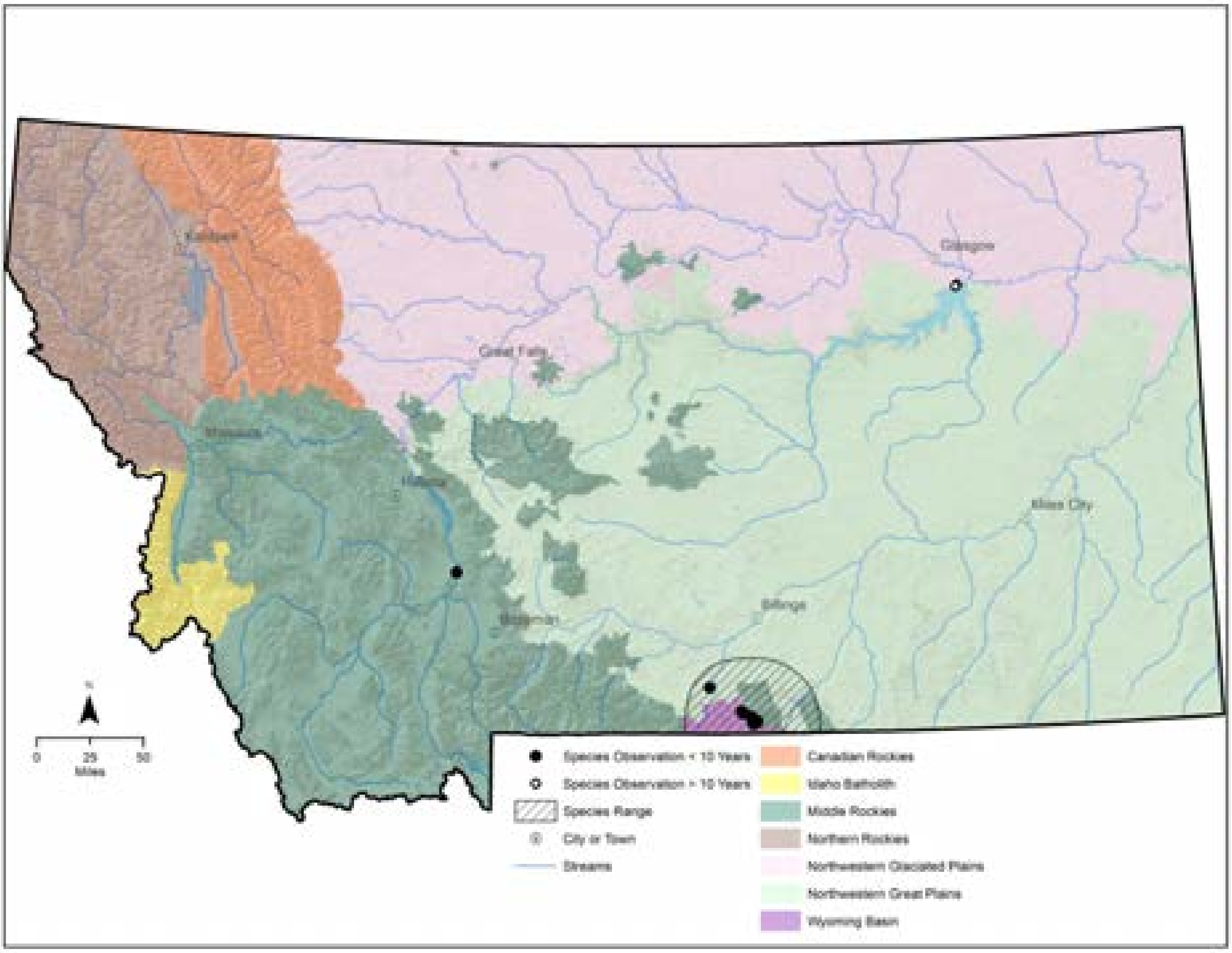

Figure 28. Montana range and observations of the blue-gray gnatcatcher

Habitat

Breeding habitat in Montana is restricted to open stands of Utah juniper (*Juniperus osteosperma*) and limber pine (*Pinus flexilis*) with intermixed big sage (*Artemisia tridentata*). All nests found have occurred 2.5 to 5.5 feet above ground in Utah juniper or big sage growing on the lower slopes or bottoms of canyons (P. Hendricks unpublished data).

Throughout their range blue-gray gnatcatchers typically inhabit deciduous forest, riparian woodland, open woodland, second-growth, scrub, brushy areas and chaparral in the east, south, and coastal west (Tropical to lower Temperate zones) (American Ornithologists Union 1998, Ellison 1992). In the Great Basin region of the west they also occupy open pine woodland, where they are associated with rosaceous shrubs and rock outcrops (Pavlacky and Anderson 2001).

They nest especially where tracts of brush, scrub, or chaparral are intermixed with taller vegetation (e.g., forest edge, riparian corridors); nesting often occurs near water. Nests are built on branches or forks of trees or shrubs, usually 3.3 to 82 feet above ground (Harrison 1978) and both sexes participate in nest construction. A broad range of brushy habitats is occupied during winter (Ellison 1992).

Management
No management activity is currently underway. Grazing may have a negative impact by directly or indirectly altering habitat for nesting and foraging. Nest parasitism by brown-headed cowbirds has recently been documented in Montana (P. Hendricks unpublished data).

This species is expanding its range northward and using existing bird survey efforts (e.g. Statewide Integrated Monitoring in Bird Conservation Regions surveys) may help track this expansion. Targeted surveys still may be needed.

Management Plan
None.

Blue-gray Gnatcatcher Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Brown-headed cowbird nest parasitism	Brown-headed cowbird nest parasitism	Monitor known breeding sites to determine status Monitor parasitism by brown-headed cowbirds
Poor grazing practices	Poor grazing practices	Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs
	Wildfire increase	Appropriate conservation action(s) unknown

Additional Citations
American Ornithologists' Union. 1998. Check-list of North American birds. 7th edition. American Ornithologists' Union, Washington, D.C.

Ellison, Walter G. 1992. Blue-gray Gnatcatcher (*Polioptila caerulea*). Species Account Number 023. The Birds of North America Online (A. Poole, Ed.). Ithaca, New York: Cornell Laboratory of Ornithology; http://bna.birds.cornell.edu/bna/species/023/articles/introduction

Harrison, C. 1978. A field guide to the nests, eggs and nestlings of North American birds. Collins, Cleveland.

Pavlacky, D. C., and S. H. Anderson. 2001. Habitat preferences of pinyon-juniper specialists near the limit of their geographic range. Condor 103:322-331.

<u>Caspian Tern</u> (*Hydroprogne caspia*)

State Rank: S2B
Global Rank: G5

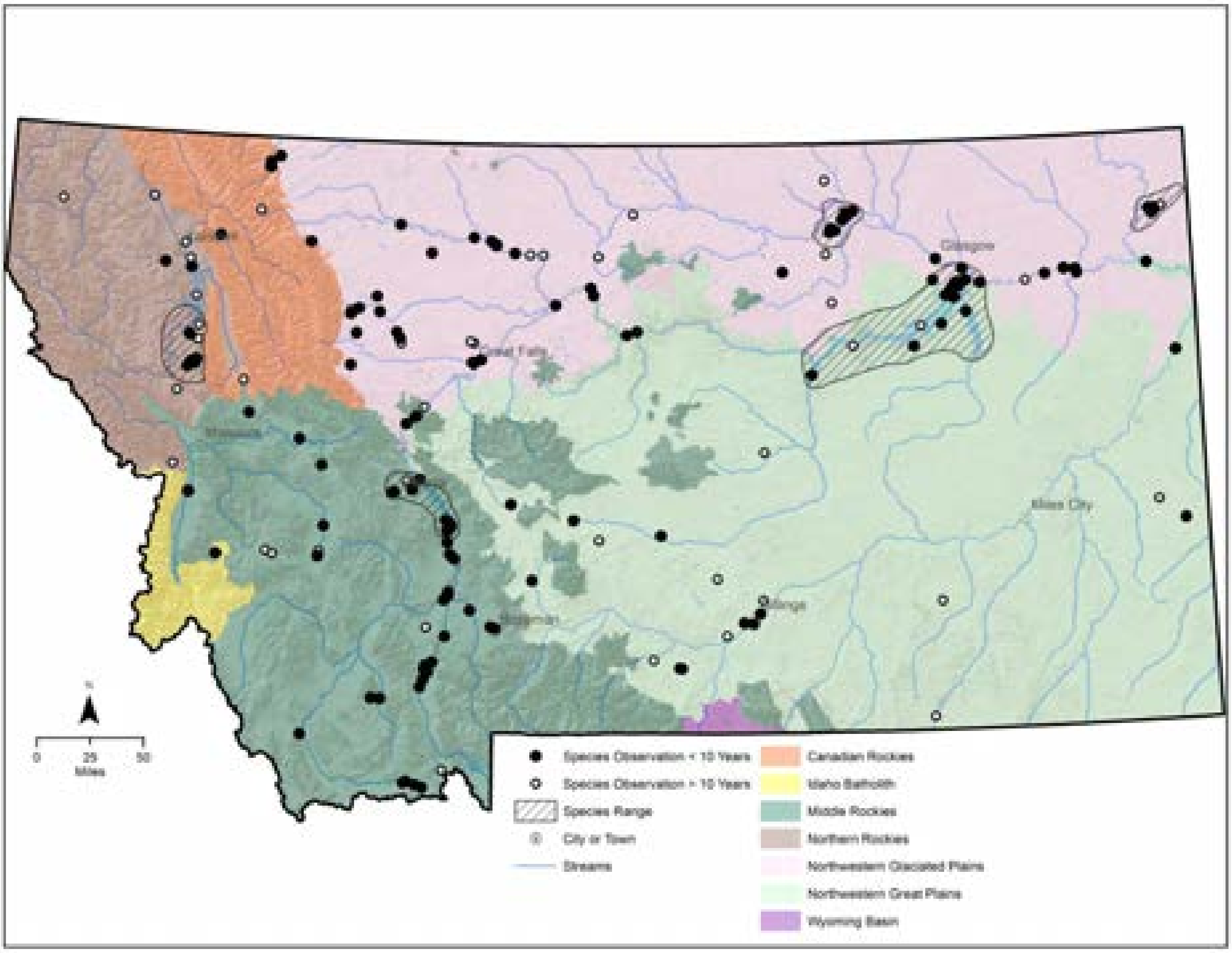

Figure 29. Montana range and observations of the Caspian tern

<u>Habitat</u>

In Montana, the Caspian tern prefers islands within large lakes or reservoirs, where sandy or stony beaches are used for nesting (Johnsgard 1986). The species has also been noted to utilize rivers, though nesting in this habitat is not documented (Johnsgard 1986, Casey 2000).

<u>Management</u>

No management activities specific to Caspian tern in Montana are documented, however, management recommendations include surveying known nesting colonies on an annual basis to determine status; providing adequate levels of water to protect nesting terns from mammalian predators; managing water levels on lake and river nesting areas to mimic natural seasonal fluctuations; and minimizing human disturbance at nesting colonies during the breeding season (Casey 2000).

<u>Management Plan</u>

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Caspian Tern Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Human disturbance	Human disturbance	Minimize human disturbance at nesting colonies during the breeding season
Inter-species competition	Inter-species competition	Survey known and potential nesting areas annually to determine status
	Climate change	Continue to evaluate current climate science models and recommended actions Manage water levels on lake and river nesting areas so as not to flood nest sites Monitor habitat changes and address climate impacts through adaptive management as necessary Provide adequate water levels to protect nesting islands from mammalian predators Routine monitoring of known populations

Additional Citations
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Johnsgard, P. A. 1986. Birds of the Rocky Mountains with particular reference to national parks in the Northern Rocky Mountain region. Colorado Associated University Press, Boulder.

Chestnut-collared Longspur (*Calcarius ornatus*) State Rank: S2B
Global Rank: G5

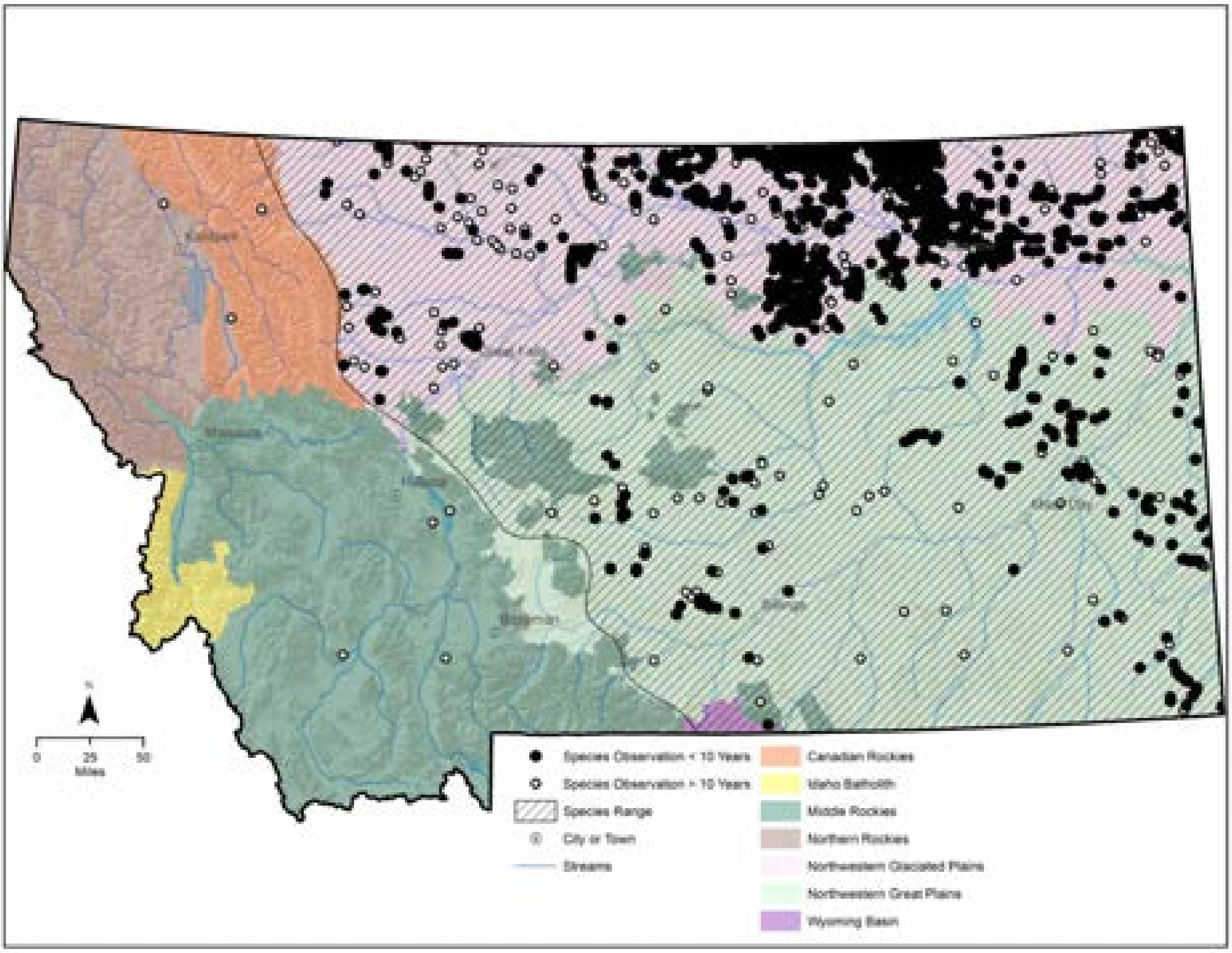

Figure 30. Montana range and observations of the chestnut-collared longspur

Habitat

Species prefers short-to-medium grasses that have been recently grazed or mowed. This species prefers native pastures.

Management

This species is one of several that is monitored under the Statewide Integrated Monitoring in Bird Conservation Regions surveys (Hanni et al. 2011).

Management Plan

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Chestnut-collared Longspur Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Habitat conversion	Habitat conversion	Protect grasslands that are at highest risk of conversion to cropland through the use of easements and where possible fee acquisition Provide incentives to maintain grazed grasslands over conversion to croplands Work with landowners and land management agencies to limit activities that may be detrimental to this species
Lack of grazing to create favorable structure	Lack of grazing to create favorable structure	Implement grazing management that creates heterogeneous structure, with emphasis of mid to shorter stature vegetation on a yearly basis Reduce tall, thick vegetation Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs
	Oil and gas exploration and extraction	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (In prep) Monitor population trends via *Breeding Bird Surveys* and *Statewide Integrated Monitoring in Bird Conservation Regions* (Hanni et al. 2011) surveys
	Wind energy development	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep)

Additional Citations

Hanni, D. J., C. M. White, R. A. Sparks, J. A. Blakesley, J. J. Birek, N. J. Van Lanen, and J. A. Fogg. 2011. Field protocol for spatially-balanced sampling of landbird populations. Unpublished report. Rocky Mountain Bird Observatory, Brighton, Colorado

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Montana Fish, Wildlife & Parks. *In Prep*. Fish and Wildlife Recommendations for Wind Energy Development in Montana.

<u>Gray-crowned Rosy-Finch</u> (*Leucosticte tephrocotis*) State Rank: S2B, S5N
Species of Greatest Inventory Need Global Rank: G5

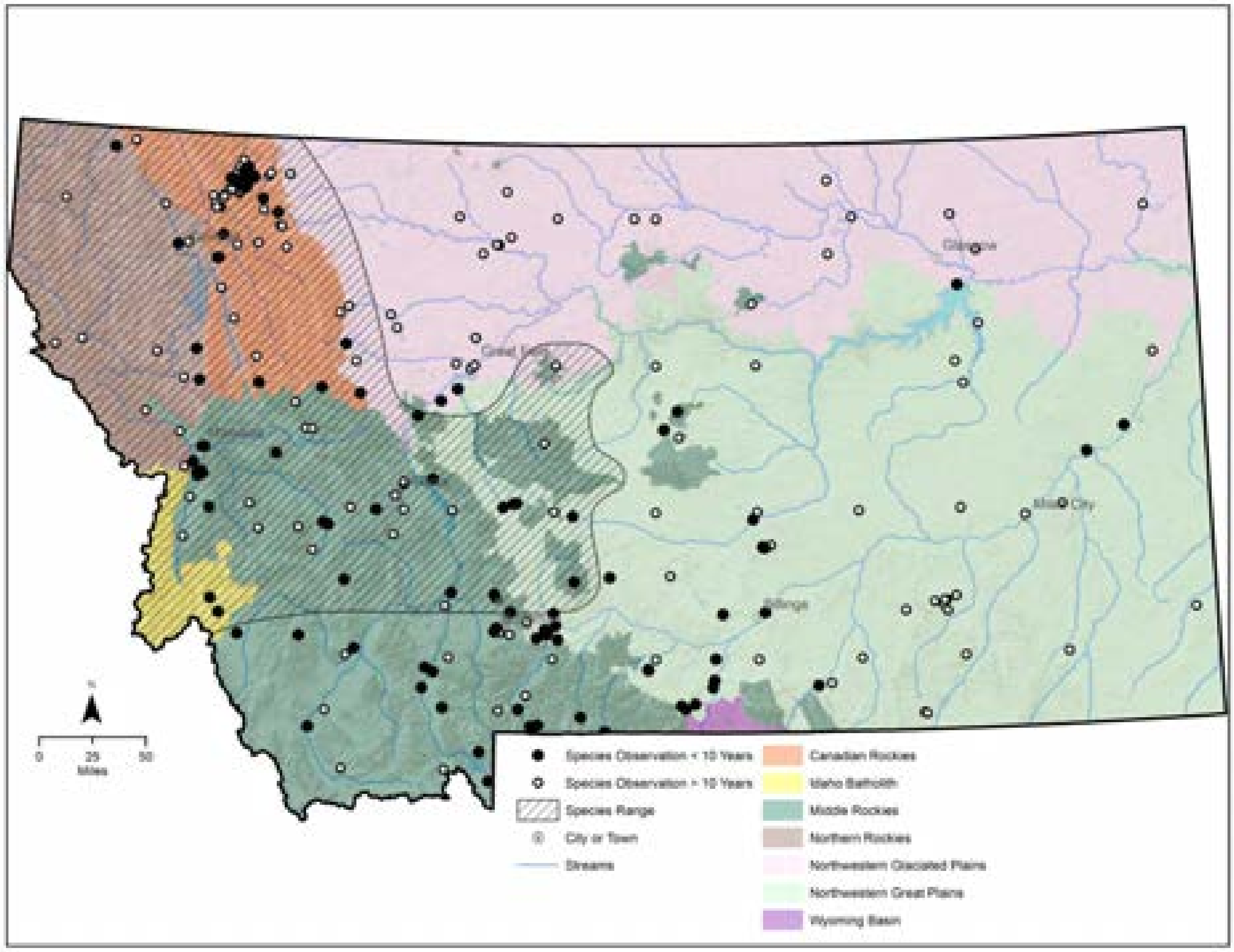

Figure 31. Montana range and observations of the gray-crowned rosy-finch

<u>Habitat</u>

Breeding, nesting, and winter roosting habitat in Montana is similar to other regions in the species' range (Johnson 1965, Hendricks 1981). Gray-crowned rosy-finches nest in crevices in cliffs and talus among glaciers and snowfields above timberline (also in abandoned buildings above treeline) and forage in barren, rocky or grassy areas adjacent to the nesting sites; in migration and winter they also occur in open situations, fields, cultivated lands, brushy areas, and around human habitation. They may roost in mine shafts or similar protected sites. During some winters individuals move out onto the shortgrass and mid-grass prairies to feed (Hendricks and Swenson 1983, Swenson et al. 1988).

<u>Management</u>

No special management action appears to be required at this time, although traditional winter roosts in abandoned mine shafts should be protected and reclaimed using methods that allow continued access by the birds, if possible.

Management Plan
None.

Gray-crowned Rosy-Finch Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Data poor - inadequate monitoring Lacks a baseline survey		Determine where the Montana nesting populations over winter Encourage citizen data & data entry via Ebird or other appropriate publicly shared outlets Examine Christmas Bird Count data for trends in wintering populations Search for winter roost sites - determine if they need protection (e.g. open mine shafts) Set up and periodically run alpine bird surveys during the breeding season to monitor changes in distribution and population Target species for survey and inventory
Human disturbance	Human disturbance	If winter roost sites are identified as threatened by human activities consider management options (e.g. gate mine shafts instead of sealing them)
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations
	Wind energy development	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep)

Additional Citations

Hendricks, P. 1981. Observations on a winter roost of Rosy Finches in Montana. J. Field Ornithol. 52:235-236.

Hendricks, P. and J. Swenson. 1983. Dynamics of the winter distribution of Rosy Finches, *Leucosticte arctoa*, in Montana. Can. Field-Nat. 97(3): 307-310.

Johnson, R. E. 1965. Reproductive activities of rosy finches, with special reference to Montana. Auk 82:190-205.

Montana Fish, Wildlife & Parks. *In Prep*. Fish and Wildlife Recommendations for Wind Energy Development in Montana.

Swenson, J. E., K. C. Jensen and J. E. Toepfer. 1988. Winter movements by Rosy Finches in Montana. J. Field Ornithol., 59(2): 157-160.

Greater Sage-Grouse (*Centrocercus urophasianus*) State Rank: S2
Global Rank: G3G4

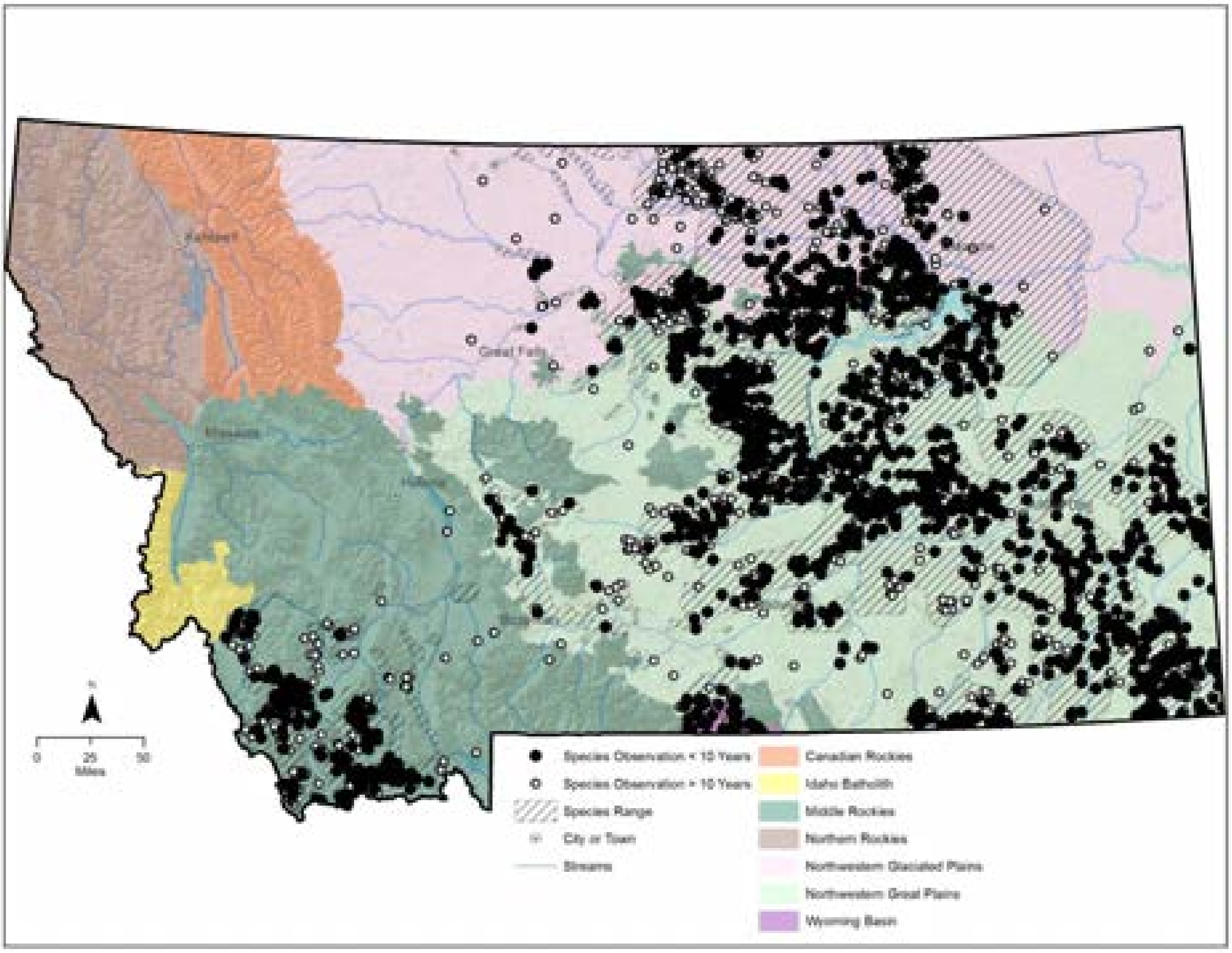

Figure 32. Montana range and observations of the greater sage-grouse

Habitat

Greater sage-grouse select specific habitat characteristics in response to season and life stage. During the spring breeding season, males congregate on display areas to attract females. Leks, which usually consist of clearings surrounded by sagebrush, are revisited annually. The majority of greater sage-grouse nests are located within 3 miles of a lek. Hens generally nest under stands of sagebrush 12 to 30 inches in height, seeking taller shrubs in a stand for nesting. Residual grass (remaining from the previous growing season) is important for providing nest concealment from predators and the probability of sage-grouse selecting a nesting site increases with increasing residual grass height. After eggs hatch, hens seek relatively open sagebrush stands with more than 15% grass and forb canopy cover. Insects and succulent forbs provide critical food for young broods. As summer progresses and upland forbs desiccate, hens will move broods to moist sites along drainages, ditches, or irrigated meadows/hay crops. In general, moist areas with standing herbaceous cover, for concealing broods from predators, interspersed with sagebrush grasslands provide high-quality brood habitat. Improvements in native grass and forb height and density generally translate into better nest success and brood survival. During late fall and winter, greater sage-grouse feed almost exclusively on sagebrush. Wintering greater sage-grouse typically prefer extensive stands of sagebrush with 10 - 30% canopy cover. However, sage-grouse will move to areas of exposed sagebrush for food and cover if deep snow conditions are present.

Contiguous large blocks of intact, functional sagebrush grassland are best suited for meeting yearlong needs of greater sage-grouse. Limited seasonal habitats (e.g., nesting cover, brood rearing habitat, winter habitat, etc.) may restrict the abundance, productivity, or occurrence of greater sage-grouse in a particular area.

Management

Greater sage-grouse are managed under state authority, including the statutory authority to regulate harvest. Legislative mandate designates the greater sage-grouse as an upland game bird (87-2-101, MCA).

FWP, in conjunction with federal land management agencies and conservation groups, monitors greater sage-grouse populations during spring through a census of displaying males on leks. The post-harvest telephone survey provides an estimate of harvest for all upland bird species, trends in hunter numbers, and number of birds by species taken by hunters.

In 2008, FWP identified and mapped the areas that are most important to the persistence of sage-grouse populations in the state. These "Core Areas" were based on densities of displaying males and associated habitat. State, federal, and local partners use these Core Areas to focus conservation and management action designed to benefit sage-grouse.

State-funded cooperative habitat projects have the potential to benefit greater sage-grouse. In 1987 the Montana legislature created a process and funding source for FWP to purchase conservation interests in important wildlife habitats through conservation easements and fee title acquisitions. The program generates funding from an earmarked portion of license revenue and provides an innovative tool to protect habitat at the state level. The Upland Game Bird Habitat Enhancement Program was developed through a series of Montana legislative sessions from 1987 to 2001. This program funds habitat enhancements on private and public lands such as vegetation plantings, grazing management systems, and leases. The program helped fund (in combination with the USFWS Landowner Incentive Program) the Montana Sagebrush Initiative, which is a 30-year private land lease program designed to conserve high-priority sagebrush grasslands from prescribed fire, herbicide applications, plowing, and other practices intended to reduce or eliminate sagebrush and forbs.

Federally-funded cooperative habitat projects are also available through the NRCS Sage Grouse Initiative. This initiative accesses several different funding sources for sagebrush restoration, enhancement, and conservation on private lands. Priority projects for these funds are located within FWP's sage-grouse Core Areas. Other federal land management agencies (i.e., BLM, USFS) also prioritize management for sage-grouse within Core Areas.

On March 5, 2010, USFWS determined that the greater sage-grouse warrants protection under the ESA, but that listing the species under the Act is precluded by the need to address other listing actions of a higher priority.

Management Plans
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Montana Sage-grouse Habitat Conservation Advisory Council. *In prep*. DRAFT Greater Sage-grouse Habitat Conservation Strategy.

Montana Sage Grouse Work Group. 2005. Management plan and conservation strategies for greater sage-grouse in Montana- Final Montana Sage Grouse Work Group. 200 pp.

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Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY.

Stiver, S. J. A.D. Apa, J. R. Bohne, S. D. Bunnell, P. A. Deibert, S. C. Gardner, M. A. Hilliard, C. W. McCarthy, and M. A. Schroeder. 2006. Greater Sage-grouse Comprehensive Conservation Strategy. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, WY.

U.S. Fish and Wildlife Service. 2013. Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report. U.S. Fish and Wildlife Service, Denver, CO.

Greater Sage-Grouse Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Fragmentation of sagebrush grasslands (e.g., energy development, power lines, roads, urban sprawl)	Fragmentation of sagebrush grasslands (e.g., energy development, power lines, roads, urban sprawl)	Cluster development and use existing corridors for new infrastructure to minimize fragmentation Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (In prep) Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep)

Current Impacts	**Future Threats**	**Conservation Actions**
		Minimize new surface disturbance by adhering to surface disturbance thresholds as defined in relevant management plans
Habitat conversion	Habitat conversion	Actively engage local working groups, organizations, and agency partnerships to promote and expand greater sage-grouse conservation Follow actions set out in the *Management Plan and Conservation Strategies for Sage Grouse in Montana – Final* (Montana Sage Grouse Work Group 2005) Promote conservation of intact sagebrush grassland landscapes through incentives and easements Provide incentives to maintain grazed grasslands over conversion to croplands Work with landowners and land management agencies to limit activities that may be detrimental to this species
Fences	Fences	Mark fences to reduce collisions
Invasive plant species	Invasive plant species	Apply appropriate range management practices to reduce presence and spread of noxious and invasive plant species
Poor grazing practices	Poor grazing practices	Support livestock grazing management that maintains or improves native rangeland integrity and provides standing herbaceous cover, important for nesting and brood rearing Support research evaluating livestock grazing systems that enhance sage-grouse habitat features and ultimately sage-grouse populations

Current Impacts	Future Threats	Conservation Actions
Rangeland treatments (e.g., prescribed fire and spraying)	Rangeland treatments (e.g., prescribed fire and spraying)	Apply herbicides selectively (i.e., no broadcast application) Consider research on the use of fire to increase stand diversity (forbs) and productivity of invertebrates, especially where brood survival is low due to lack of food resources; any fire use must be carefully evaluated
West Nile virus	West Nile virus	Follow BMPs designed to minimize habitat for the mosquitoes vectors of West Nile virus when constructing new water structures
	Climate change	Continue monitoring of known populations Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Montana Fish, Wildlife & Parks. *In Prep*. Fish and Wildlife Recommendations for Oil and Gas Development in Montana.

Montana Fish, Wildlife & Parks. *In Prep*. Fish and Wildlife Recommendations for Wind Energy Development in Montana.

Montana Sage Grouse Work Group. 2005. Management plan and conservation strategies for greater sage-grouse in Montana- Final Montana Sage Grouse Work Group. 200 pp.

<u>Harlequin Duck</u> (*Histrionicus histrionicus*) State Rank: S2B
Species of Greatest Inventory Need Global Rank: G4

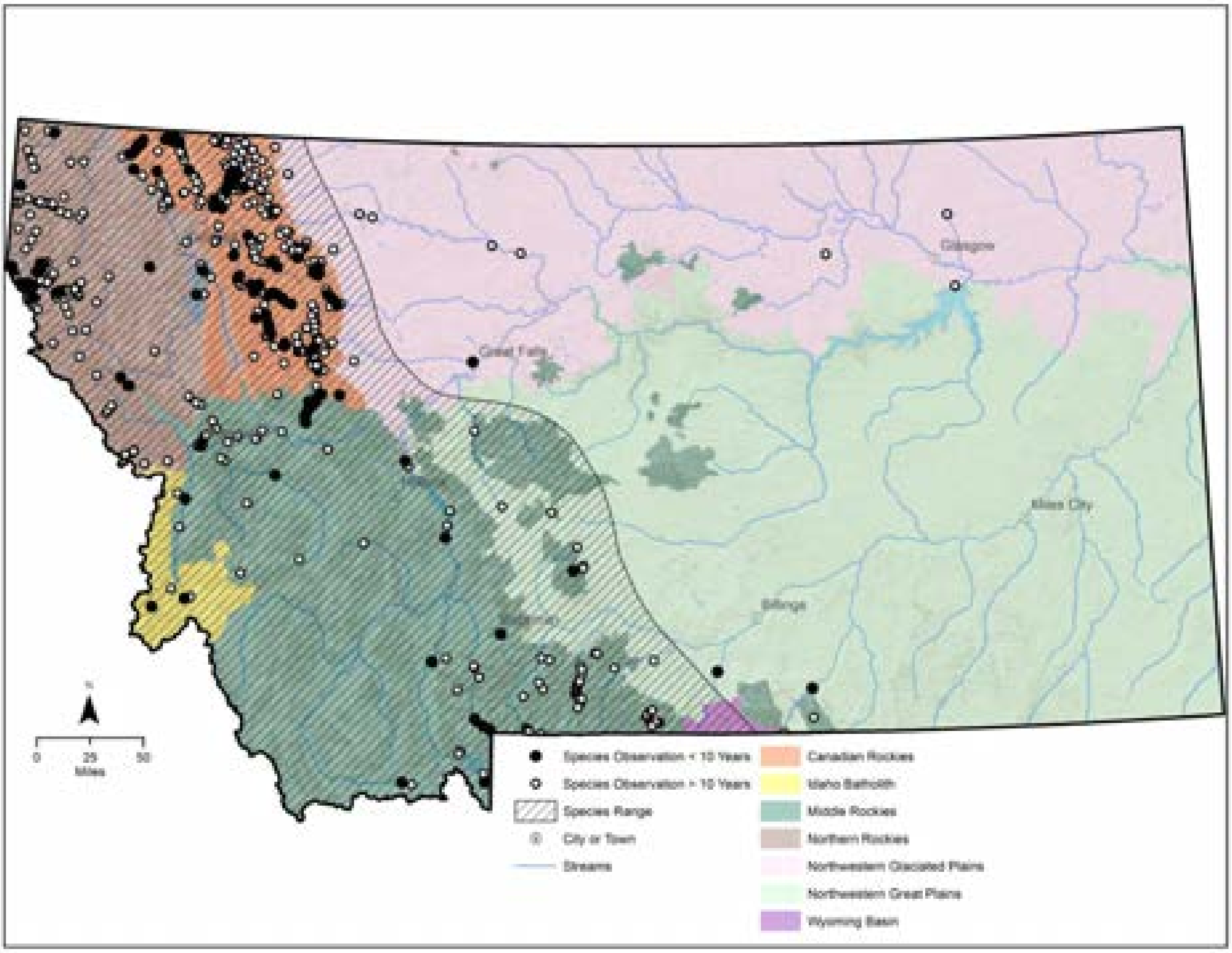

Figure 33. Montana range and observations of the harlequin duck

<u>Habitat</u>

In Montana, most harlequin ducks inhabit fast-moving, low-gradient, clear mountain streams. Overstory in Montana does not appear to affect habitat use: in Glacier National Park, birds used primarily old-growth or mature forest (90%), and most birds in streams on the Rocky Mountain Front were seen in pole-sized timber (Diamond and Finnegan 1993). Banks are most often covered with a mosaic of trees and shrubs, but the only significant positive correlation is with overhanging vegetation (Diamond and Finnegan 1993; Ashley 1994).

Four habitat characteristics were noted at more than 50% of harlequin duck observations in the Tetons (Wallen 1987): 1) streamside perennial shrub vegetation, 2) meandering (braided) channel types, 3) more than 3 loafing sites per 10 meters, and 4) areas unused by humans. Wallen (1987) postulated that human activities might have a greater influence on breeding success than available habitat. Harlequins feed primarily on crustaceans, mollusks, insects, and a few small fishes.

The strongest stream section factor in Montana appears to be for stream reaches with 2-plus loafing sites per 33 feet (Kuchel 1977; Diamond and Finnegan 1993; Ashley 1994). Broods may preferentially use backwater areas, especially shortly after hatching (Kuchel 1977), though this is not apparent in data from other studies (Ashley 1994). Stream width ranges from 10 to 115 feet in Montana. On stream gradients of 7%, occupied stream reaches ranged from 1.8 to 2.8% (Fairman and Miller 1990), while velocity at 42 harlequin observation points ranged from 2.6 to 13.5 feet per second (Diamond and Finnegan 1993). Harlequins in Glacier National Park used straight, curved, meandering, and braided stream reaches in proportion to their availability, as was the case for bottom types (Ashley 1994).

Harlequin ducks breed locally on mountain streams in the western part of the state (Reichel and Genter 1995), including the Kootenai, Flathead, Clark Fork, and Blackfoot river drainages. Scattered breeding also occurs along the Rocky Mountain Front and the northern edge of Yellowstone National Park (YNP). Harlequin ducks are known to occur in Bonner, Boundary, Clearwater, and Shoshone counties in Idaho. Harlequin ducks in Glacier National Park confine almost all activities to swiftly running waters (90% of area used), but also used cut-off side channels and other backwaters during periods of high water and as brood rearing habitat (Kuchel 1977). Females with broods avoided all areas frequented by humans. Occupied streams in northern Idaho were usually in mature/old-growth western red cedar/western hemlock or Engelmann spruce/subalpine fir stands. Cassirer and Groves (1991) suggested that the presence of mature/old-growth forest in northern Idaho might indicate streams with high-quality, low-sediment loads, intact riparian areas, and relative inaccessibility to humans. Stream sections most suitable for harlequin breeding had gradients less than 10 degrees and banks lined with dense perennial shrubs; breeding and brood rearing occurred on streams with a mean gradient less than 30 degrees. In Idaho hens nest in cliff cavities, tree cavities, and on the ground.

Management Plans

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Cassirer, E. F., J. D. Reichel, R. L. Wallen, and E. C. Atkinson. 1996. Harlequin Duck (*Histrionicus histrionicus*) conservation assessment and strategy for the U.S. Rocky Mountains. Unpublished technical report, Idaho Department of Fish and Game, Lewiston, Idaho.

North American Waterfowl Management Plan. 1998. Expanding the Vision (update). 32 pp.

Will, G. C. January 1986. Waterfowl, Sandhill Crane and Snipe Management Plan.

Harlequin Duck Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Data poor Outdated survey		Continue survey efforts to find occupied streams throughout its range in the state Develop a statewide population estimate

Current Impacts	**Future Threats**	**Conservation Actions**
		Develop monitoring schedule to estimate and evaluate population trend Target species for survey and inventory
Destruction of watershed stability and stream flow regimes	Destruction of watershed stability and stream flow regimes	Maintain and enhance fisheries and aquatic invertebrate populations Maintain backwater areas that are used for brood rearing Maintain large woody debris for nesting sites; in some cases, nest boxes may be erected to supplement natural nesting sites On stream reaches with water control structures, avoid increasing peak flows during nesting season
Human disturbance by paddlers (especially in breeding season)	Human disturbance by paddlers (especially in breeding season)	Consider limiting access and certain types of activities when known to be disturbing to nest sites
Impoundments and diversions on breeding streams	Impoundments and diversions on breeding streams	Encourage watershed management practices that maintain habitat quality throughout the nesting season Explore impoundment removal if possible
Roads	Roads	Decommission old/unused roads Manage road density at or below current levels
Forest management	Forest management	Work with landowners and land management agencies to limit activities that may be detrimental to occupied streams
Water pollution on headwater streams utilized for nesting, brood rearing, and prey base	Water pollution on headwater streams utilized for nesting, brood rearing, and prey base	Work with watershed groups, agencies, organizations, and the public to identify and reduce point source pollution in headwater streams

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

<u>Additional Citations</u>

Ashley, J. 1994. Progress report: harlequin duck inventory and monitoring in Glacier National Park, Montana. Unpublished report. Division of Research Management, Glacier National Park, Montana. 14 pp.

Cassirer, E. F., and C. R. Groves. 1991. Harlequin duck ecology in Idaho. 1987–1990. Idaho Fish and Game and U.S. Fish and Wildlife Service.

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Kuchel, C. R. 1977. Some aspects of the behavior and ecology of harlequin ducks breeding in Glacier National Park, Montana. M.S. thesis, University of Montana, Missoula, Montana. 160 pp.

Reichel, J. D., and D. L. Genter. 1995. Harlequin duck surveys in western Montana: 1994. Montana Natural Heritage Program, Helena, Montana.

Wallen, R. L. 1987. Habitat utilization by harlequin ducks in Grand Teton National Park. Unpublished MS thesis, Montana State University, Bozeman, Montana.

<u>Least Tern</u> (*Sterna antillarum*) State Rank: S1B
Species of Greatest Inventory Need Global Rank: G4

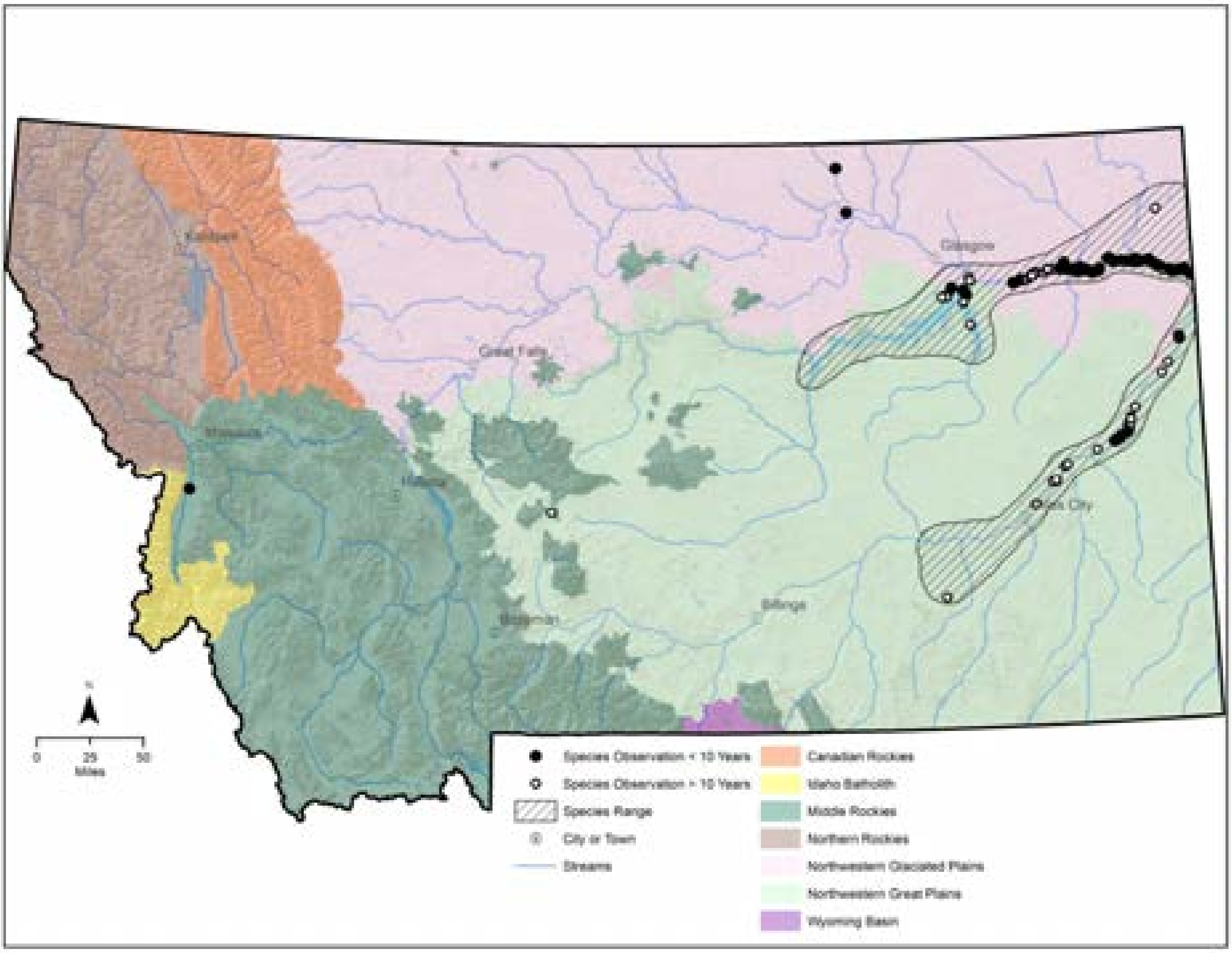

Figure 34. Montana range and observations of the least tern

<u>Habitat</u>
Least terns nest on unvegetated sand-pebble beaches and islands of large reservoirs and rivers in northeastern and southeastern Montana, specifically the Yellowstone and Missouri river systems (Christopherson et al. 1992). These wide, open river channels, and lake and pothole shorelines provide the preferred characteristics for nesting Least Terns. Sites with gravel substrate provide the most suitable sites for nesting (Montana Piping Plover Recovery Committee (MPPRC) 1994). One of the most limiting factors to nesting site selection is vegetational encroachment; Least terns avoid areas where relatively thick vegetation provides cover for potential predators. Fine-textured soils are easier to treat mechanically than rocky or gravelly soils when vegetation is determined as a limiting factor in an area's ability to provide suitable nesting habitat, but fine soils are not typically a preferred nesting substrate (MPPRC 1994).

In Montana, as in other areas, another and more important limiting factor in nest site selection is the location of nesting sites in relation to surrounding water levels. Nests are often inundated because water levels are kept unnaturally high throughout the breeding season and high winds can cause nests to be flooded. In addition, nesting sites may simply not be available because of encroaching vegetation or because water levels are so high that beaches are under water during the early part of, and possibly throughout, the nesting season (MPPRC 1994).

Management

As identified in the USFWS recovery plan for the least tern, delisting can be considered when 4 censuses confirm that the interior population has reached 7,000 and remains stable for at least 10 years. The goal for the Missouri River system is 2,100 birds (census numbers in 2003 revealed 735 birds for the Missouri River in total; Pavelka personal communication), with 50 individuals as the minimum targeted for Montana's population. Interior least tern counts in the Missouri River drainage continue to fall short of that population target even though extensive recovery efforts have occurred in that drainage over the past decade. This drainage has been extensively impounded and modified, and population size of least terns in the Missouri River drainage remains at or near levels that were present in 1990, despite a high investment in habitat manipulation and management. This indicates that the population has been stable, estimated recoverable carrying capacity of available habitat in the Missouri River drainage was likely overestimated in the 1990 recovery plan, and is not biologically achievable under the existing habitat baseline.

FWP periodically surveys least terns along the Yellowstone but has found average or fewer than average number of birds during the past 5 years of monitoring.

Appropriate water management, that which includes natural seasonal flows, is identified as the major consideration for least tern conservation in Montana, for the greatest threat to breeding pairs, in some years, is the loss of existing nesting sites from inundation by high water at unusual times of the breeding season (MPPRC 1994). Rising water levels late in the nesting season can also decrease overall island size, and may result in assisting local avian predators to locate nests (containing eggs or nestlings) more easily (Erickson and Prellwitz 1999). These conditions reinforce the need to manage reservoirs and dammed rivers in a manner that mimics more natural seasonal fluctuations for the protection of least tern populations. Other management activities beneficial to the species include: instituting grazing management practices more appropriate to the conservation of the least tern; controlling access to key nesting locations; moving nests upslope from areas where flooding of nests is imminent; relocating eggs to nests of other Least Terns for foster incubation; signing of beaches to indicate nesting by least terns (though in areas where there is hostility toward the species, or toward listed species in general, this is not recommended); beach enhancement (grading or burning to remove unwanted encroaching vegetation); raising island elevation to make room to move nests in years with rising water during the nesting season (MPPRC 1994); and timing spring flow releases from Fort Peck Dam to more closely mimic the natural seasonal flows of the river (FWP 2013). Other management activities to enhance habitat or affect better protection for this species includes reducing human, dog, and vehicular disturbance during nesting (FWP 2013).

Management of least terns is under direction of the 1990 USFWS Recovery Plan and the 2006 FWP species management plan that calls for a goal of 50 individuals within Montana.

Management Plans
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Least Tern Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Data poor Outdated survey		Target species for survey and inventory
Food availability	Food availability	Investigate fish prey abundance and foraging success along both the Missouri and Yellowstone rivers
Human disturbance	Human disturbance	Manage human use at nesting beaches Preservation and restoration of suitable nesting habitat through protective easements
Nesting and reproductive success	Nesting and reproductive success	Analysis of the population's likelihood of persistence, using Population Viability Analysis, coupled with a review of the status of the interior least tern Continued annual monitoring of terns coupled with efforts to standardize monitoring and data collection techniques within and between states in the interior U.S.
Pollution and environmental contaminants	Pollution and environmental contaminants	Decrease point and nonpoint inputs of pesticides and heavy metals into rivers and floodplains

Current Impacts	Future Threats	Conservation Actions
Increased predator abundance	Increased predator abundance	Continued site specific use of predator management deterrent and control measures Management of vegetation encroachment to increase nest site availability and security Remove human created structures utilized by predators (e.g. abandoned buildings)
Unpredictable water levels (flooding)	Unpredictable water levels (flooding)	Management of water flows that reduce the potential for nest inundation but allow for periodic bank scouring for habitat creation
Water flow and river dynamics	Water flow and river dynamics	Management of water flows that restore riverine habitats and their associated ecosystem processes

<u>Additional Citations</u>

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Lewis's Woodpecker (*Melanerpes lewis*) State Rank: S2B
Global Rank: G4

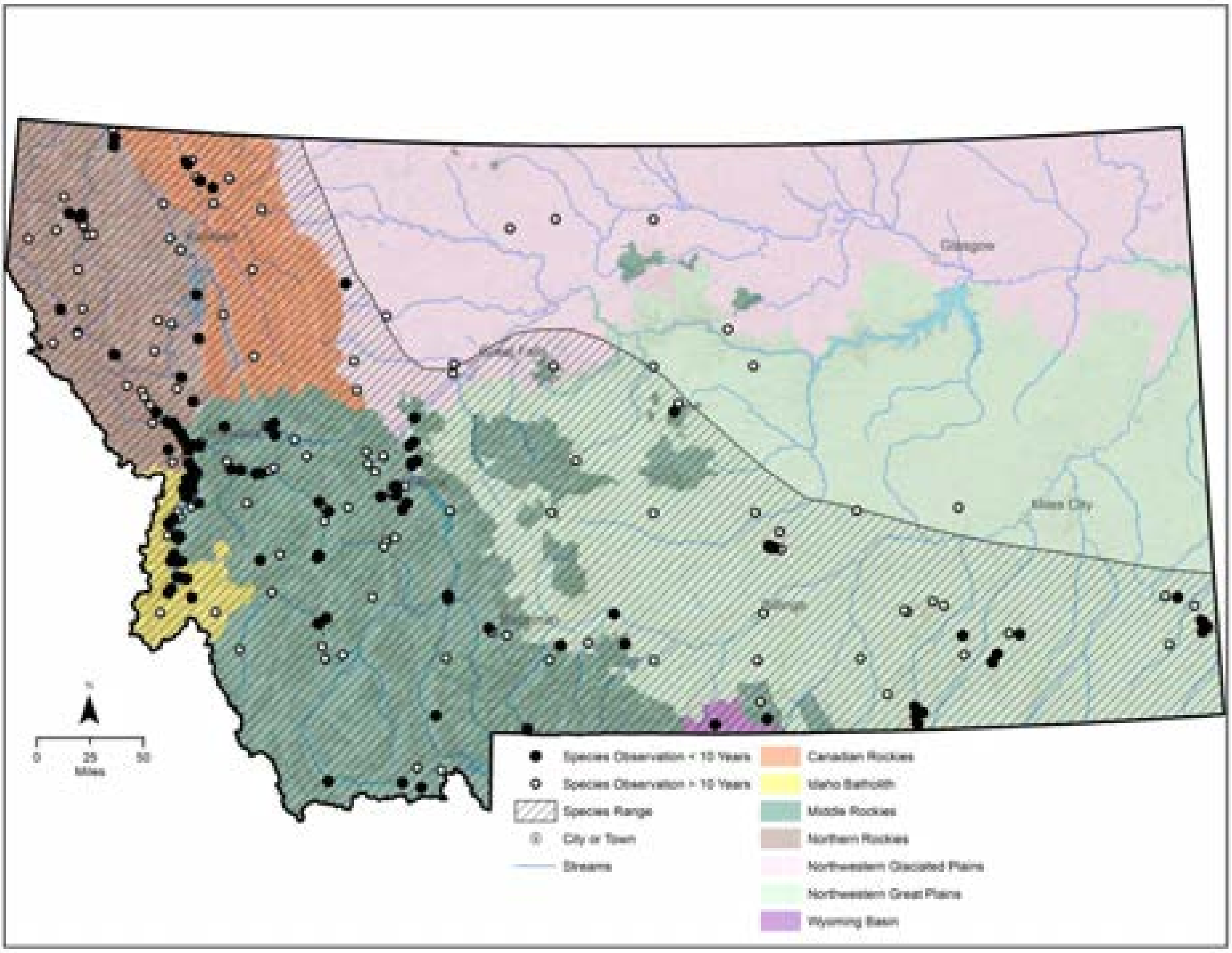

Figure 35. Montana range and observations of the Lewis's woodpecker

Habitat

In the Bozeman area, Lewis's woodpeckers are known to occur in river bottom woods and forest edge habitats (Skaar 1969). Habitat information from other Lewis's woodpecker sources state that the breeding habitat is open forest and woodland, often logged or burned, including oak and coniferous forest; primarily ponderosa pine (*Pinus ponderosa*), riparian woodland and orchards, and less commonly in pinyon-juniper (*Pinus* spp.-*Juniperus* spp.; American Ornithologists Union 1998). Lewis's woodpecker distribution is closely associated with open ponderosa pine forest in western North America, and is strongly associated with fire-maintained old-growth ponderosa pine (Diem and Zeveloff 1980, Tobalske 1997, Saab and Dudley 1998).

Important habitat features include an open tree canopy, a brushy understory with ground cover, dead trees for nest cavities, dead or downed woody debris, perch sites, and abundant insects. Lewis's woodpeckers use open ponderosa pine forests, open riparian woodlands dominated by cottonwood (*Populus* spp.), and logged or burned pine. They also use oak (*Quercus* spp.) woodlands, orchards, pinyon-juniper woodlands, other open coniferous forests, and agricultural lands. Apparently the species prefers open ponderosa pine at high elevations and open riparian forests at lower elevations (Bock 1970, Tobalske 1997). In the Blue Mountains of Oregon, they showed a preference for open stands near water (Thomas et al. 1979). Because the species catches insects from the air, perches near openings or in open canopy are important for foraging habitat (Bock 1970, Tobalske 1997).

Lewis's woodpeckers often use burned pine forests, although suitability of post-fire habitats varies with the age, size, and intensity of the burn, density of remaining snags, and the geographic region. Birds may move to unburned stands once the young fledge (Block and Brennan 1987, Tobalske 1997, Saab and Dudley 1998). They have been generally considered a species of older burns rather than new ones, moving in several years post-fire once dead trees begin to fall and brush develops, 5 to 30 years after fire (Bock 1970, Block and Brennan 1987, Caton 1996, Linder and Anderson 1998). However, on a 2- to 4-year-old burn in Idaho they were the most common cavity-nester, and occurred in the highest nesting densities ever recorded for the species (Saab and Dudley 1998). As habitat suitability declines, however, numbers decline. For example, in Wyoming, the species was more common in a 7-year-old burn than in a 20-year-old burn (Linder and Anderson 1998). Overall, suitable conditions include an open canopy, availability of nest cavities and perches, abundant arthropod prey, and a shrubby understory (Linder and Anderson 1998, Saab and Dudley 1998).

Unlike other woodpeckers, Lewis's woodpeckers are not morphologically well adapted to excavate cavities in hard wood. They tend to nest in a natural cavity, abandoned northern flicker (*Colaptes auratus*) hole, or previously used cavity, 3 to 170 feet above ground. Sometimes they will excavate a new cavity in a soft snag, dead branch of a living tree, or rotting utility pole (Harrison 1979, Tobalske 1997). The mated pair may return to the same nest site in successive years. On partially logged burns with high nesting densities in Idaho, nest sites were characterized by the presence of large, soft snags and an average of 25 snags per acre that had more than 9-inch diameter at breast height (Saab and Dudley 1998).

In late summer, wandering flocks move from valleys into mountains or from breeding habitat to orchards. In winter, they use oak woodlands and nut and fruit orchards. An important habitat feature in many wintering areas is the availability of storage sites for grains or mast, such as tree bark (e.g. bark of mature cottonwood trees) or power poles with desiccation cracks (Bock 1970, Tobalske 1997). In southwestern Arizona and southeastern California, Lewis's woodpeckers may use scrub oak, pecan orchards, and cottonwoods, but more study is needed in this area (Bock 1970). In Mexico, they use open and semi-open woodlands, especially those with oaks (Howell and Webb 1995).

<u>Management</u>

No known active management is ongoing for Lewis's woodpecker in the state. However, management for Lewis's woodpeckers in dry forests fits very well with the management needs for flammulated owls. The landscape-level needs of the flammulated owl would probably accommodate any habitat-area needs of Lewis's woodpeckers. Specific needs of the Lewis's woodpecker at the microsite and site level could be met in the form of interspersed zones of shrubby understory within the overall habitat mosaic (Casey 2000). Recommendations for snag retention in forest management plans have been developed (Thomas et al. 1979). To sustain a maximum density of Lewis's woodpeckers (6.7 pairs per acre) a density of 101 snags per 100 acres, more than 12 inches in diameter at breast height, and more than 30 feet in height must be maintained in ponderosa pine, riparian cottonwood and mixed-conifer forest (Thomas et al. 1979).

The strongest populations are found within 2 riverine IBAs, the Bitterroot River and Clark Fork River/Grass Valley IBAs. Strengthen conservation efforts within these IBAs and consider additional IBA acreage (if data support).

Management Plan
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Lewis's Woodpecker Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Development	Development	Encourage usage of FWP's voluntary subdivision recommendations (FWP 2012) with local planners Review sub-division requests and make recommendations based on FWP's *Fish and Wildlife Recommendations for Subdivision Development* (FWP 2012)
Habitat loss: Loss of riparian habitat Loss or alteration of open ponderosa pine stands Snag loss/removal	Continued habitat loss: Logging Loss of riparian habitat Loss or alteration of open ponderosa pine stands Snag loss - nesting	In dry forests with potential habitat, maintain or restore open conditions following management recommendations for flammulated owls; in cottonwood bottomlands retain snags, open forest structure, and shrub cover for a robust arthropod community (Fylling 2013) Manage ponderosa pine stand densities to restore or maintain open, park-like conditions through selective harvest techniques Manage water releases to mimic flooding and help with cottonwood recruitment in riparian areas Provide outreach to private landowners on the importance of retaining snags in riparian bottomland habitat

Current Impacts	Future Threats	Conservation Actions
		Remove Russian olive, salt cedar, and other invasive species from riparian areas Retain sufficient large snags in order to provide soft snags over time Review existing data and consider additional surveys in dry forest and post-fire habitats to determine the importance of these habitats for Montana populations Snag creation in managed forest stands (ponderosa pine, riparian)
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations
	Nest site competition	Appropriate conservation action(s) unknown

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<u>Mountain Plover</u> (*Charadrius montanus*) State Rank: S2B
Global Rank: G3

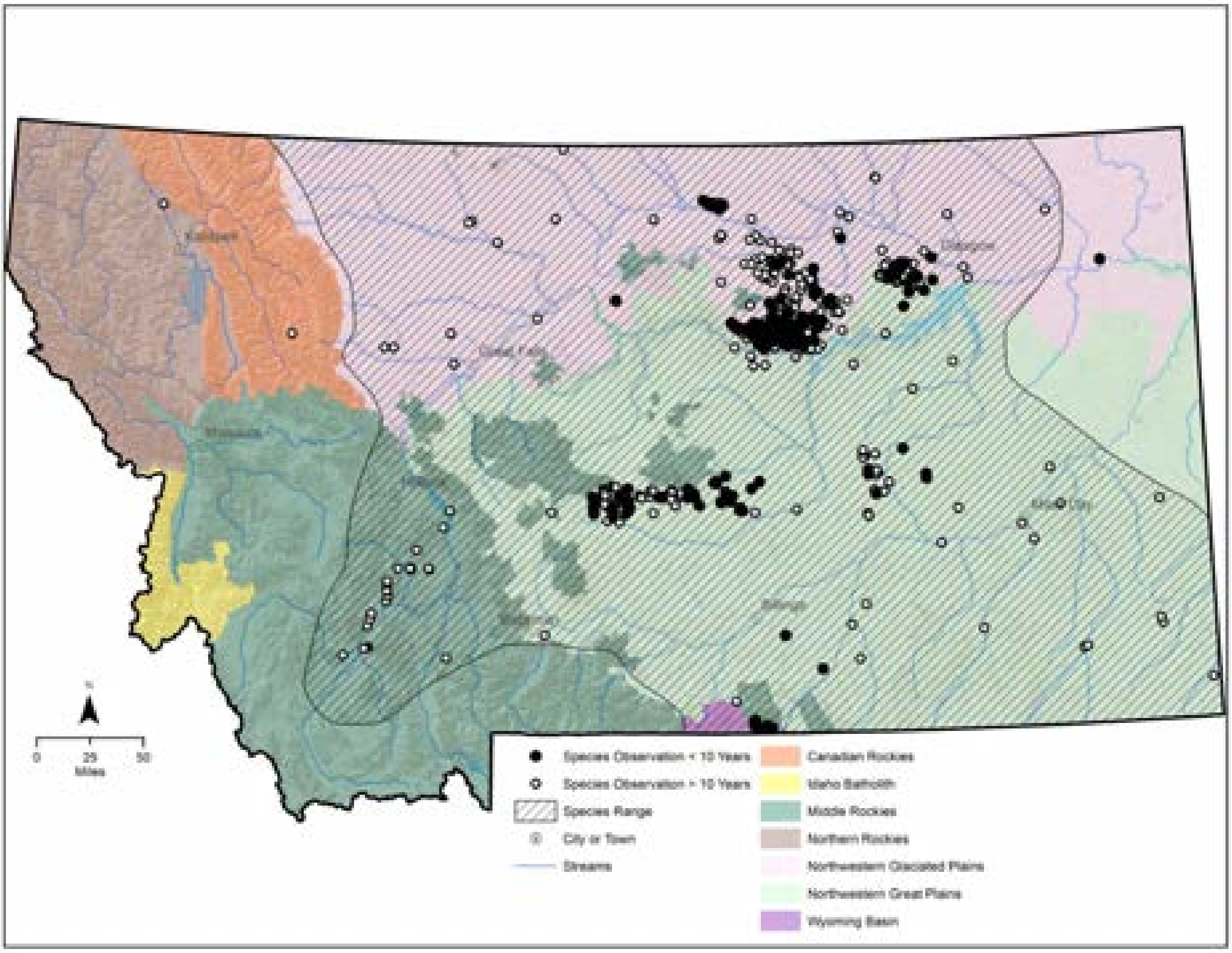

Figure 36. Montana range and observations of the mountain plover

<u>Habitat</u>

Habitat use in Montana appears similar to other areas within the species' global breeding range, i.e., use of prairie dog colonies are primarily used in Montana; however, other short-grass prairie sites are confirmed as preferred breeding habitat. Records indicate the species utilizes towns of both white-tailed (*Cynomys leucurus*) and black-tailed prairie dogs (*Cynomys ludoviscianus*). Prairie dog towns provide greater horizontal visibility, a higher percentage of bare ground, refugia for consumption, and a higher diversity of forbs than adjacent areas (Olsen 1985). Mountain plovers will use towns as small as 7.4 acres (Knowles et al. 1982); from 15 to 124 acres in another study (Olson-Edge and Edge 1987), and from 5 to more than 371 acres in another (Dinsmore 2001).

Primary habitat use in Montana during the breeding season includes heavily grazed, short-grass prairie sites. Habitat in Phillips and Blaine counties, the area containing the largest known populations of mountain plover in the state, is dominated by the native plant species *Bouteloua gracilis* and *Koeleria cristata*. This area also contains *Stipa comata*, *Agropyron smithii*, *Carex* spp., *Artemisia frigida*, *Opuntia polyacantha*, and *Gutierrezia sarothrae* (FaunaWest 1991).

Knowles and Knowles (1993) determined that in the northeastern portion of the state, mountain plover also selected sites associated with habitat dominated by *Atriplex gardneri* and *Eriogonum multiceps*, while use in the central and southwestern areas of the state was associated with *Bouteloua gracilis* and *Stipa comata*. Strong preference was also given to sites with slopes less than 5% and grass height of less than 3 inches (Knowles et al. 1995). Knowles and Knowles (1993) indicates that sites selected within these habitat types were restricted to areas intensively grazed by prairie dogs, sheep, and/or cattle, especially those of the *Stipa comata* and *Bouteloua gracilis* habitat type (Knowles and Knowles 1997).

Management

Only the BLM has some management activities specific to mountain plover; increased coordinated management activities in Montana are needed. However, the unifying habitat features desirable to mountain plovers are extremely short vegetation, a high percentage of bare soil, and an extensive area (0.3 to 0.6 miles in diameter) of nearly level terrain (Knowles and Knowles 1997). Management practices should emulate these parameters to ensure that these populations persist. Several studies have suggested specific conservation actions that could be taken to benefit mountain plover habitat (Wershler 1989; FaunaWest Wildlife Consultants 1991; Knopf 1991; Carter and Barker 1993; USFWS 1995; Dinsmore 2001).

Management Plans

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Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Mountain Plover Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Decrease of total acreage of prairie dog habitat on suitable substrate selected by mountain plovers	Decrease of total acreage of prairie dog habitat on suitable substrate selected by mountain plovers	Continued management and potential enhancement to prairie dog colonies Use plague vaccine, if proven effective, on prairie dog towns most likely to be used by mountain plovers
Habitat loss of short-grass prairies due to conversion to cropland	Habitat loss of short-grass prairies due to conversion to cropland	Promote conservation of intact grassland landscapes through incentives and easements Protect grasslands that are at highest risk of conversion to cropland through the use of easements and where possible fee acquisition Provide incentives to maintain grazed grasslands over conversion to croplands

Current Impacts	Future Threats	Conservation Actions
		Work with landowners and land management agencies to limit activities that may be detrimental to this species
Invasive plant species	Invasive plant species	Apply appropriate range management practices to reduce presence and spread of noxious and invasive plant species Shrub and noxious weed encroachment should be controlled at known and potential breeding sites
Lack of grazing to create favorable structure	Lack of grazing to create favorable structure	Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs

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Piping Plover (*Charadrius melodus*) State Rank: S2B
Global Rank: G3

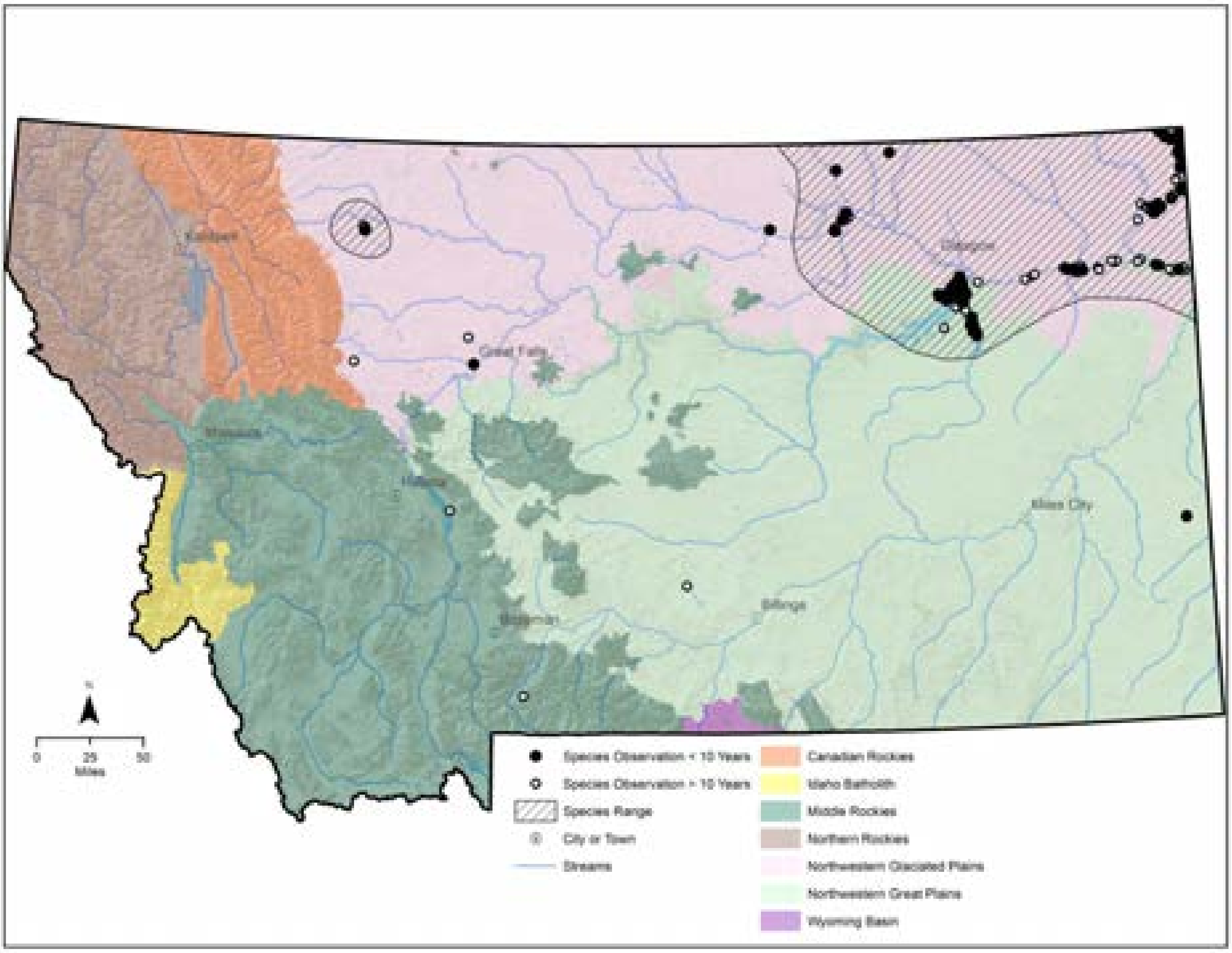

Figure 37. Montana range and observations of the piping plover

Habitat

Piping plovers primarily select unvegetated sand or pebble beaches on shorelines or islands in freshwater and saline wetlands. Vegetation, if present at all, consists of sparse, scattered clumps (Casey 2000). Open shorelines and sandbars of rivers and large reservoirs in the eastern and north-central portions of the state provide prime breeding habitat (FWP 2013). In Montana and throughout the species' range, nesting may occur on a variety of habitat types. If conditions are right, alkali wetlands, lakes, reservoirs, and rivers can all provide the essential features required for nesting. The alkali wetlands and lakes found in the northeastern corner of the state generally contain wide, unvegetated, gravelly, salt-encrusted beaches. Rivers that flood adequately can supply open sandbars or gravelly beaches, as can large reservoirs, with their shoreline beaches, peninsulas, and islands of gravel or sand (USFWS 2013).

Sites with gravel substrate provide the most suitable sites for nesting (MPPRC 1994). One of the most limiting factors to nesting site selection is vegetation encroachment; piping plovers avoid areas where vegetation provides cover for potential predators. Fine-textured soils are easier to treat mechanically than rocky or gravelly soils when vegetation is determined as a limiting factor in an area's ability to provide suitable nesting habitat, but fine soils are not typically a preferred nesting substrate (MPPRC 1994). Another, and more important, limiting factor in nest site selection is the location of nesting sites in relation to surrounding water levels. Nests are often inundated because water levels are kept unnaturally high throughout the breeding season (and high winds can cause nests to be flooded), or nesting sites are not available, either because of encroaching vegetation or because water levels are so high that beaches are underwater during the early part of, and possibly throughout, the nesting season (MPPRC 1994). Nests are simple scrapes dug into the nest substrate, which may or may not be lined with pebbles (MPPRC 1994, 1995; Haig 1992).

Management

Four specific geographic areas recognized as providing critically important habitat and identified as essential for the conservation of the species have been designated as "Critical Habitat Units" in Montana by USFWS. The designation of critical habitat may require federal agencies to develop special management actions affecting these sites. The 4 units include prairie alkali wetlands and surrounding shoreline; river channels and associated sandbars and islands; and reservoirs and inland lakes with associated shorelines, peninsulas, and islands (USFWS 2013). Piping plovers rely on these places for courtship, nesting, foraging, and brood rearing. The first, Unit 1, contains alkali lake and wetland habitat found in Sheridan County. Unit 2 is identified as riverine habitat and includes the Missouri River just south of Wolf Point to the state line, encompassing habitat provided by the sparsely vegetated sandbars and sandy or gravelly beaches along this stretch of the river. Reservoirs, which include similar sandbars and sandy or gravelly beach habitat, define both Units 3 and 4. Unit 3 includes Fort Peck Reservoir, from south of the dam to and including approximately 26 miles (north to south distance) of the length of Dry Arm. Portions of the Bowdoin National Wildlife Refuge, the majority of Lake Bowdoin, and the western portion of Dry Lake, were designated as Unit 4. Piping plovers nest at Nelson Reservoir north of the Bowdoin National Wildlife Refuge, but are not contained within any of the Critical Habitat Units in the state. This reservoir was excluded from the critical habitat designation because of a Memorandum of Understanding between the BOR, USFWS, and the local irrigation districts. The Memorandum, in combination with a biological opinion from the USFWS, guides management actions at this location (USFWS 2013).

The 2011 international piping plover breeding census detected roughly half of the plovers detected in previous censuses. Censuses are conducted every 5 years. Significant flooding throughout the nesting range of the plover in this year likely limited nesting and survey detectability.

An interagency team, to include FWP, began revision of the 1988 recovery plan in 2010 and it is still being developed. FWP management of piping plovers is also guided by the 2006 species management plan that has goal of 60 breeding pairs over a 10 year running average, distributed across appropriate habitats in Montana. A workshop was held in 2011 to discuss current population status and trend of the great plains population and new population monitoring and estimation techniques.

Management Plans

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Piping Plover Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Flooding Water flow and river dynamics	Flooding Water flow and river dynamics	Encourage management of water flows that restore riverine habitats and their associated ecosystem processes
Food availability	Food availability	Investigate forage availability
Human disturbance	Human disturbance	Consider limiting access and certain types of activities when known to be disturbing to nest sites
Increased predator abundance	Increased predator abundance	Continued site specific use of predator management deterrent and control measures Control gull populations in close proximity to plover breeding locations by eliminating nesting habitat for gulls (install structures avoided by gulls) Remove human created structures utilized by predators (e.g. abandoned buildings)

Current Impacts	**Future Threats**	**Conservation Actions**
Land use change: Conversion of uplands to cropland Wetland loss and modification	Land use change: Conversion of uplands to cropland Wetland loss and modification	Manage vegetation encroachment and substrate to increase nest site availability Protect habitat that is at highest risk of conversion to cropland through the possible use of easements and acquisition Work with landowners and land management agencies to limit activities that may be detrimental to this species
Nesting and reproductive success	Nesting and reproductive success	Continue annual monitoring of plovers coupled with efforts to standardize monitoring and data collection techniques within and between states/provinces in the Northern Great Plains
Pollution and environmental contaminants	Pollution and environmental contaminants	Work with watershed groups, agencies, organizations, and the public to identify and reduce point source pollution in headwater streams
Poor grazing practices	Poor grazing practices	Provide assistance to private landowners interested in implementing voluntary conservation measures that improve wetland habitat and limit livestock disturbance Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs

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Sharp-tailed Grouse (*Tympanuchus phasianellus*)

State Rank: S1, S4
Global Rank: G5

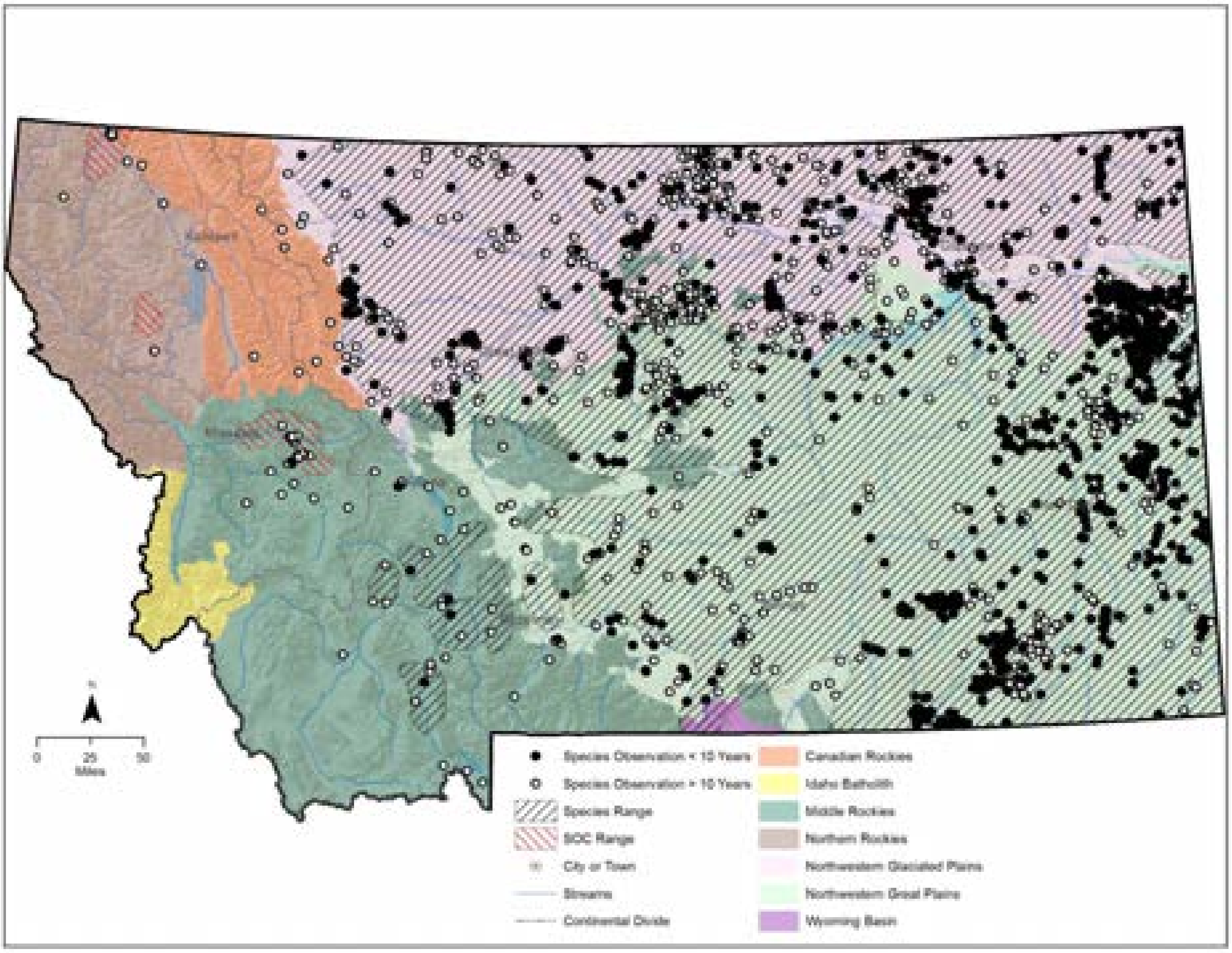

Figure 38. Montana range and observations of the sharp-tailed grouse

Habitat

The habitat is primarily grasslands interspersed with shrub and brush-filled coulees. They prefer stands of inter-mixed tree and shrub grasslands. With high population, they spread into islands of native grassland, usually along drainages surrounded by grain fields. Sharp-tailed grouse persist only on native bunchgrass-shrub stands. In Idaho, Saab and Marks (1992) found birds selected big sage habitat types during summer. They appeared to prefer range habitats that were in good condition.

Until recently, sharp-tailed grouse in Montana were found west of the Continental Divide in larger mountain valleys with extensive native bunchgrass-shrub stands. However, they have now apparently been extirpated, or nearly extirpated, from this historic range (Hoffman and Thomas 2007).

Management

Only populations west of the Continental Divide are a SGCN with a state rank of S1. Populations east of the Continental Divide have a state rank of S4 and are not a SGCN.

Careful population counts must be made, as well as counts of nesting sites and breeding success. Counting individuals at leks is the easiest way to monitor population trends. Wildlife agencies monitor leks because their size and density provide an index to populations and indirectly reflect changes in habitat quality (Cannon and Knopf 1981; Giesen and Connelly 1993).

Management Plans

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Wood, M. 1991. Management plan for Columbian sharp-tailed grouse in western Montana.

Sharp-tailed Grouse Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Conversion of native grassland and shrub/grass communities to agriculture and other unsuitable land uses	Conversion of native grassland and shrub/grass communities to agriculture and other unsuitable land uses	Coordinate with British Columbia to manage suitable habitat along the international Kootenai River valley Protect habitat that is at highest risk of conversion to cropland through the possible use of easements acquisition Provide incentives to maintain grazed grasslands over conversion to croplands Work with landowners and land management agencies to limit activities that may be detrimental to this species
Encroachment of conifers onto grassland habitat	Encroachment of conifers onto grassland habitat	Use prescribed fire to stimulate growth and vigor of deciduous shrubs in wintering areas, as long as a minimum of 10% of habitat will provide shrub cover during the recovery period of the burned area
Human disturbance to leks	Human disturbance to leks	Avoid pesticide use on sharp-tailed grouse habitats Prohibit physical, mechanical, and audible disturbances within the breeding complex during the breeding season (March to June), if they might impact courtship activities and breeding during the daily display period (within 3 hours of sunrise and sunset)

Current Impacts	Future Threats	Conservation Actions
		Protect known lek areas and surrounding habitats within 1.2 miles, and search for new leks in areas with appropriate physiographic and vegetative characteristics
Invasive plant species	Invasive plant species	Apply appropriate range management practices to reduce presence and spread of noxious and invasive plant species Avoid manipulation or alteration of vegetation within the breeding complex (lek and nesting areas) during the nesting period (mid-April to June)
Isolated and extremely small population	Isolated and extremely small population	Evaluate potential for sharp-tailed grouse reintroduction Identify habitat connectivity across the Continental Divide to eastern Montana populations, and enhance/conserve grassland habitats to increase or maintain connectivity Increase abundance and distribution of sharp-tailed grouse with reintroduction program into western Montana Monitor existing SGCN populations to determine if management actions are adequate
Predation on nests by ravens and other predators	Predation on nests by ravens and other predators	Protect, maintain, and enhance winter, breeding, and nesting habitats near known populations
Poor grazing practices	Poor grazing practices	Develop livestock management plans, which favor maintenance or enhancement of bunchgrass communities, forbs species diversity, and upland shrubs Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs

Additional Citations

Cannon, R. W., and F. L. Knopf. 1981. Lek numbers as a trend index to prairie grouse populations. Journal of Wildlife Management 45:776–778.

Giesen, K. M., and J. W. Connelly. 1993. Guidelines for management of sharp-tailed grouse habitats. Wildlife Society Bulletin. 21:325–333.

Hoffman, R. W. and A. E. Thomas. 2007. Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*): a technical conservation assessment. USDA Forest Service. Rocky Mountain Region. Available: http://www.fs.fed.us/r2/projects/scp/assessments/columbiansharptailedgrouse.pdf

Saab, V. A., and J. S. Marks. 1992. Summer habitat use by Columbian sharp-tailed grouse in western Idaho. Great Basin Naturalist. 52:166–173.

Whooping Crane (*Grus americana*) State Rank: S1M
Global Rank: G1

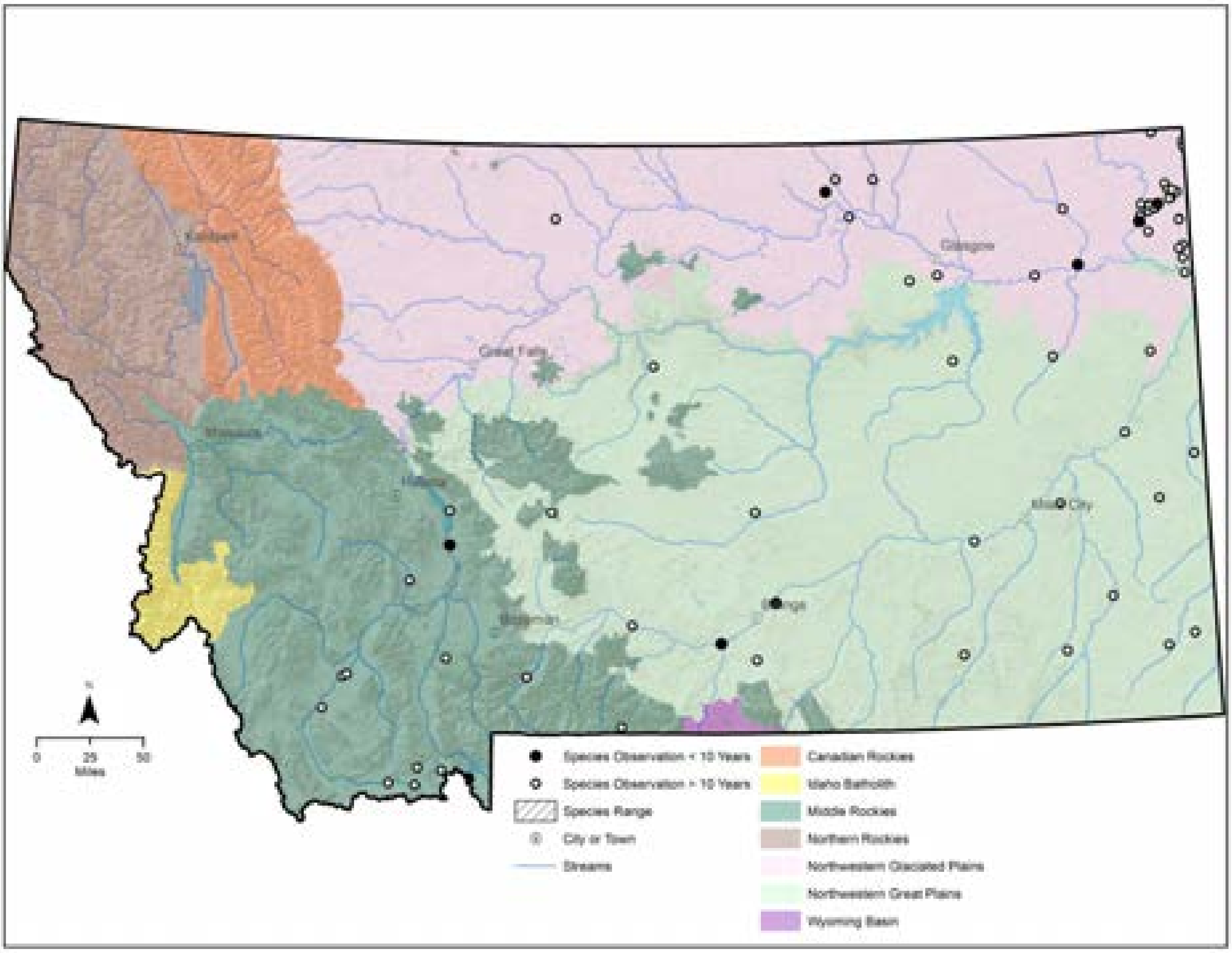

Figure 39. Montana observations of the whooping crane

Habitat
The whooping crane has been observed at or within the marsh habitat present at Medicine Lake National Wildlife Refuge and Red Rock Lakes National Wildlife Refuge. Observations of individual birds in other areas of the state include grain and stubble fields as well as wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities.

Management
Efforts continue to protect and restore wetlands in the northeastern corner of Montana, in the area where whooping cranes have migrated in the past. There are also continued efforts to educate crane and waterfowl hunters on the identification of whooping cranes in an effort to avoid accidental harvest.

Management Plans
Kushlan, J. A., M. J. Steinkamp, K. C. Parsons, J. Capp, M. A. Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J. E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, DC. 78 pp.

Olsen, D. L. 1980. Whooping Crane Recovery Plan. Whooping Crane Recovery Team. 206 pp.

Whooping Crane Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Collisions with powerlines	Collisions with powerlines Collision with turbine blades	Conduct preconstruction evaluations and/or surveys to identify wetlands that provide potentially suitable stopover habitat Do not site turbines, transmission lines, access roads, or other project facilities within or adjacent to wetlands that provide suitable stopover habitat (U.S. Department of Energy Western Area Power Administration and USFWS 2013)
Habitat degradation and fragmentation of native prairies and wetlands	Habitat degradation and fragmentation of native prairies and wetlands	Identify migration stopover habitat and work to conserve grasslands and wetlands in those areas Work with landowners to conserve native prairies in northwestern Montana
Human misidentification as sandhill cranes during hunting season	Human misidentification as sandhill cranes during hunting season	Hunter education

Additional Citations
U.S. Department of Energy Western Area Power Administration and U.S. Fish and Wildlife Service. 2013. Upper Great Plains Wind Energy Programmatic Environmental Impact Statement DRAFT. 938 pp.

Fish

Arctic Grayling (*Thymallus arcticus*)* State Rank: S1
Global Rank: G5

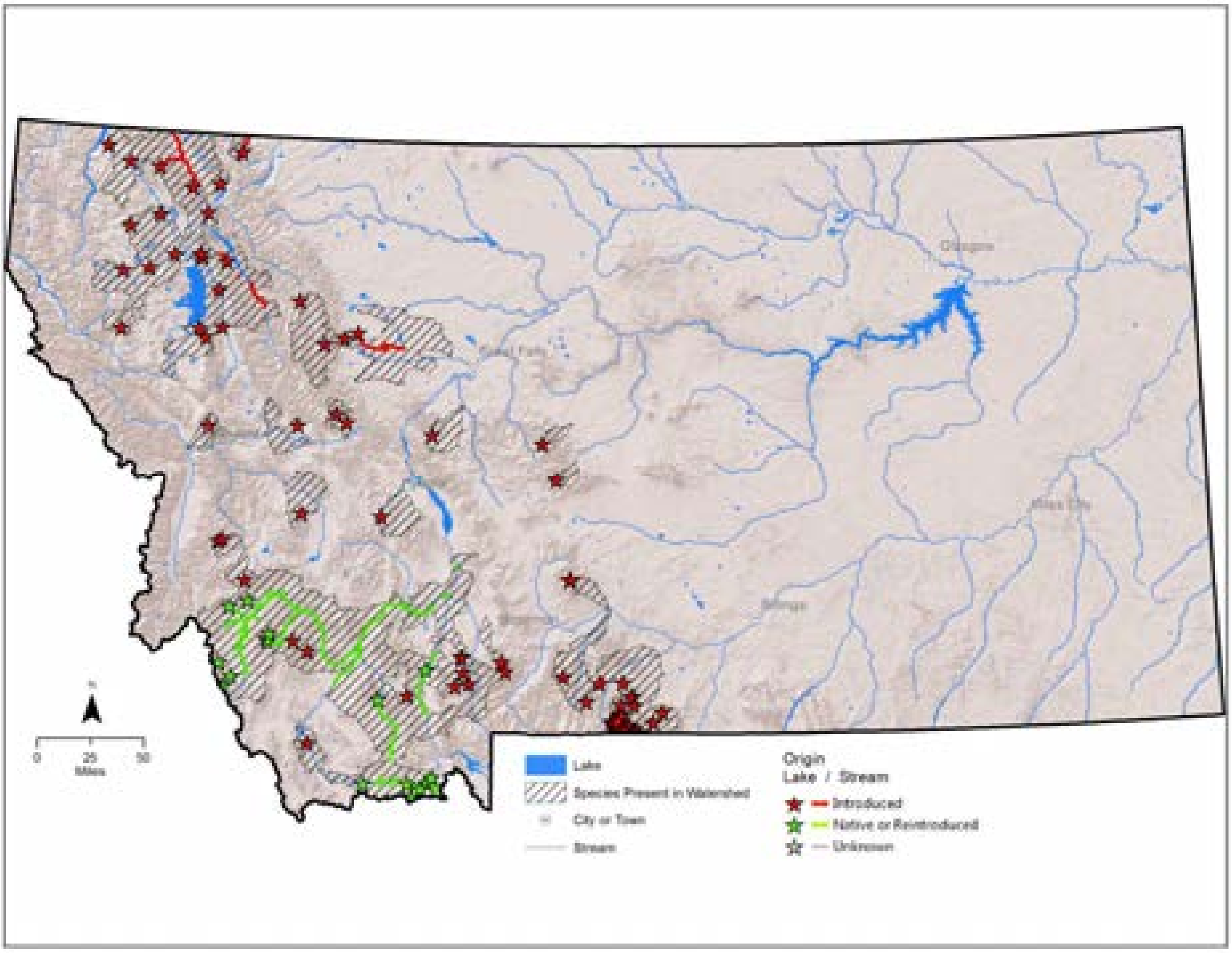

Figure 40. Distribution of Arctic grayling

Habitat

The arctic grayling occurs in both ponds/lakes as well as riverine systems; however, these differences make 2 distinct life histories of either adfluvial or fluvial populations. Cool temperatures are needed to sustain populations, and a gravelly substrate is needed for breeding purposes.

Management

On September 8, 2010, USFWS determined that the upper Missouri River basin Distinct Population Segment of Arctic Grayling warrants protection under the ESA, but that listing the species under the ESA is precluded by the need to address other listing actions of a higher priority. A proposed rule for potential ESA listing (endangered, threatened, or not warranted) will be issued in the fall of 2014, and a final rule in the fall 2015.

Habitat alterations are a key factor in the loss of fluvial Arctic grayling in most of their historic range in Montana. In an effort to conserve and recover the remaining fluvial grayling population in Montana, over the last decade FWP and numerous partners have engaged private landowners in the Big Hole Valley to aid grayling recovery through enhancement of habitat. Implemented through a USFWS approved CCAA program, the goal of the effort is to secure Arctic grayling in the upper Big Hole River by improving streamflow, protecting and enhancing stream habitat and riparian areas, increasing fish passage, and eliminating entrainment of fish in irrigation ditches.

An Arctic Grayling Work Group meets on an annual basis to develop grayling conservation strategies and work plans. The technical advisory group is chaired by FWP and includes participants from state and federal resources agencies, universities, and private interest groups.

To formalize commitments to Arctic grayling conservation in Montana, in 2007, the *Memorandum of Understanding Concerning Montana Arctic Grayling Restoration* was developed and signed by numerous state, federal, and private stakeholders. The Memorandum commits the parties to a cooperative restoration program, and provides a means to obligate financial resources as they are available.

FWP has developed 2 conservation broods from aboriginal Big Hole River fluvial stock for fluvial grayling restoration purposes and occasional lake stocking in south-central Montana. The conservation broods, maintained in 2 lakes in the Madison and Gallatin river drainages, are to be used in efforts to reestablish native fluvial grayling in portions of their historic range, including most recently the Ruby River near Alder, Montana. A similar restoration effort in Elk Lake, near Lima, Montana, is being implemented to "replicate" the adfluvial aboriginal Red Rocks Lake population and expand the range of Arctic grayling to habitat it once occupied.

<u>Management Plans</u>

Montana Fish, Wildlife & Parks. 2007. Memorandum of Understanding Concerning Montana Arctic Grayling Restoration.

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Montana Fluvial Arctic Grayling Workgroup. 1995. Montana Fluvial Arctic Grayling Restoration Plan. Montana Department of Fish, Wildlife & Parks, Helena, Montana. *Currently under revision*

U.S. Fish and Wildlife Service. 2006. Candidate conservation agreement with assurances for Arctic grayling in the upper Big Hole River. FWS Tracking # TE104415-0.

Arctic Grayling Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Blockage of fish passage by irrigation diversions	Blockage of fish passage by irrigation diversions	Work with landowners and land management agencies to limit activities that may be detrimental to this species
Displacement by non-native rainbow and brook trout	Displacement by non-native rainbow and brook trout	Barrier installation to prevent displacement or competition Determine the effect of non-native trout on Arctic grayling Reduce stocking of non-native fish Reintroduce grayling into areas where they formerly existed
Low flows during severe drought decrease survival of older arctic grayling due to high water temperatures, increased susceptibility to predation, and diminished habitat volume	Low flows during severe drought decrease survival of older arctic grayling due to high water temperatures, increased susceptibility to predation, and diminished habitat volume	Riparian rehabilitation projects to identify degraded habitats on the Big Hole River Work with landowners and land management agencies to limit activities that may be detrimental to this species
Overharvest: Arctic grayling are easily caught by anglers and are susceptible	Overharvest: Arctic grayling are easily caught by anglers and are susceptible	Continue to modify harvest as needed
Riparian vegetation and streambanks affected by range or forest management practices, mass willow removal, and dewatering of the river for agricultural uses have negatively impacted fish habitat	Riparian vegetation and streambanks affected by range or forest management practices, mass willow removal, and dewatering of the river for agricultural uses have negatively impacted fish habitat	Assist private landowners with funding to improve habitat Continue to support Arctic grayling CCAA (USFWS 2006) Habitat restoration and enhancement Support management of grazing to maintain riparian vegetation and streambank and channel stability in excellent condition

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

* Only native or reintroduced populations will be addressed.

Additional Citations

Montana Fish, Wildlife & Parks. 2007. Memorandum of Understanding Concerning Montana Arctic Grayling Restoration.

U.S. Fish and Wildlife Service. 2006. Candidate conservation agreement with assurances for Arctic grayling in the upper Big Hole River. FWS Tracking # TE104415-0.

Blue Sucker (*Cycleptus elongates*)

State Rank: S2S3
Global Rank: G3G4

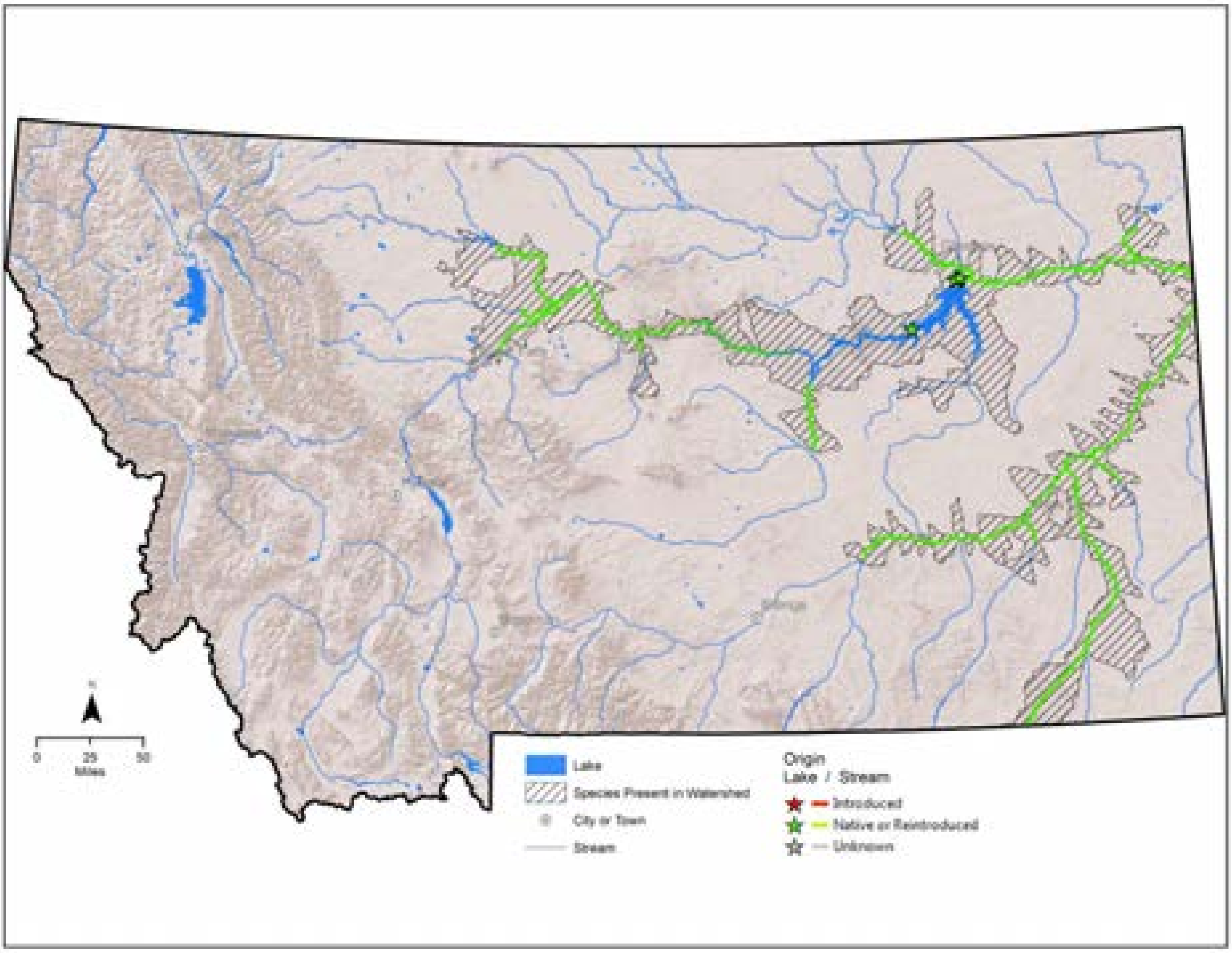

Figure 41. Distribution of blue sucker

Habitat

The blue sucker is adapted for life in swift currents with low turbidity. This fish prefers swift current areas of large rivers, feeding on insects in cobble areas (Moss et al. 1983). In the spring blue suckers migrate upriver and congregate in fast rocky areas to spawn. Large numbers have been observed migrating up tributary streams to spawn. The Tongue, Marias, Milk, and Teton rivers are the tributary streams most heavily used.

Management

Management of the blue sucker consists primarily of routine monitoring of population status and habitat protection. Currently, there is no management plan for blue suckers in Montana. The blue sucker is considered an indicator species for ecotype health because of its habitat-specific requirements, particularly migration needs that are impacted by barriers (i.e., diversions and impoundments). Current monitoring information indicates the populations are in stable condition.

Management Plans

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Blue Sucker Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Changes in riparian habitat and less regeneration of woody trees and understory	Changes in riparian habitat and less regeneration of woody trees and understory	Continue conservation of habitats by managing grazing in riparian areas Work with landowners and land management agencies to limit activities that may be detrimental to this species
Channelization of large lotic systems	Channelization of large lotic systems	Protect natural minimum instream flow reservations
Habitat changes and fragmentation caused by large dams that block passage to spawning grounds, alter stream flow, and eliminate peak flows that initiate spawning runs. Dams also discharge cold, clear water as opposed to the warm, turbid waters in which these species evolved	Habitat changes and fragmentation caused by large dams that block passage to spawning grounds, alter stream flow, and eliminate peak flows that initiate spawning runs. Dams also discharge cold, clear water as opposed to the warm, turbid waters in which these species evolved	Consider preparing a management plan for the blue sucker or include it into other comprehensive taxonomic plans Regulate water regimes to be more closely tied to natural water regimes
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

Moss, R. E., J. W. Scanlan, and C. S. Anderson. 1983. Observations on the natural history of the blue sucker (*Cycleptus elongatus* LeSueur) in the Neosho River. The American Midland Naturalist 109(1):15–22.

Bull Trout (*Salvelinus confluentus*)

State Rank: S2
Global Rank: G4

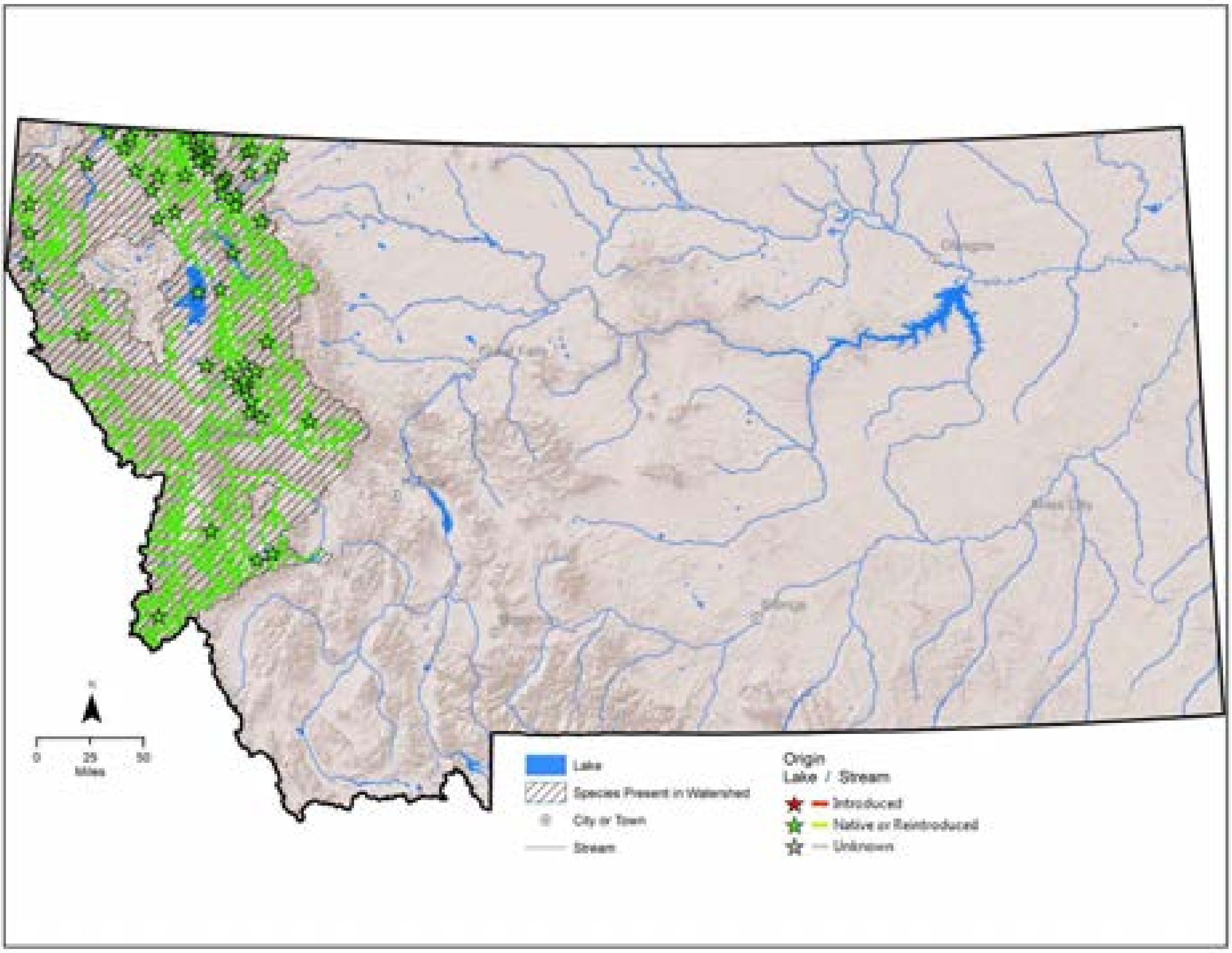

Figure 42. Distribution of bull trout

Habitat

Subadult and adult fluvial bull trout reside in larger streams and rivers and spawn in smaller tributary streams, whereas adfluvial bull trout reside in lakes and spawn in tributaries. A "resident" life history form, common in some areas, never leave natal tributaries. Bull trout spawn in cold headwater streams with clean gravel bottoms (Brown 1971; Holton 1981).

Several studies report bull trout local population genetic divergence down to the geographic scale of adjacent tributaries (Leary et al. 1993; Kanda et al. 1997; Spruell et al. 1999; Taylor et al. 1999). Based on similar patterns of population genetic structure in steelhead, Parkinson (1984) suggested that populations in geographically adjacent streams be managed as separate stocks.

Management

While bull trout remain widespread in Montana, significant declines in abundance have been observed in most populations. Major causes for these declines include changes in habitat that reduce spawning success, barriers that prevent movement of migratory fish, and non-native fish (e.g. lake and brown trout) that prey on or compete and hybridize (e.g., brook trout) with bull trout. Bull trout in the South Fork of the Flathead, above Hungry Horse Reservoir, remain a protected and robust population. Bull trout are a Montana SOC and were listed as an ESA threatened species by the USFWS in 1998 (USFWS 1998).

Because bull trout are a federally listed species, FWP and numerous state, federal, and private partners are active participants in their management and conservation. Habitat protection and restoration, and restoration of migratory corridors (e.g., removal of barriers to movement) are among key elements to bull trout conservation and recovery. The large-scale habitat restoration program in the Blackfoot Valley and the removal of Milltown Dam are notable examples of these types of efforts. The presence of predatory non-native fish, particularly lake trout, northern pike and walleye, is significant but difficult threats to address. An on-going experimental lake trout removal effort in Swan Lake has been implemented to not only aid in the conservation of Swan drainage bull trout, but also to determine whether suppression of non-native species in certain locations can assist in bull trout recovery.

Angling and harvest is closely regulated to prevent additional stress on bull trout populations. Because of their opportunistic feeding habits and late maturity, bull trout are vulnerable to overharvest and poaching/accidental harvest, especially during spawning migrations and when in tributaries (Leathe and Enk 1985; Long 1997; Schmetterling and Long 1999; Carnefix 2002). Some Montana bull trout populations (e.g., Swan, South Fork Flathead, Kootenai, and Blackfoot rivers) responded well to more restrictive angling regulations or closures, and initial conservation efforts in Montana focused on such measures. Currently, intentional angling for bull trout is prohibited everywhere except in Hungry Horse and Lake Koocanusa reservoirs, Swan Lake, and the South Fork of the Flathead River upstream from Hungry Horse reservoir. Hungry Horse Reservoir is currently the only water in the state where a limited bull trout harvest is allowed. Some level of poaching (Swanberg 1996; Long 1997) and accidental harvest due to misidentification (Schmetterling and Long 1999) probably continues to impact some bull trout populations, but it is difficult to detect, quantify, prosecute, or prevent. Recent efforts to reduce misidentification include a bull trout identification and education webpage at the FWP website (http://fwp.mt.gov/education/angler/bullTroutIdProgram/).

Management of bull trout is guided by both state and federal documents. In 2000, a State of Montana sponsored effort with multiple stakeholders produced the planning document titled *Restoration Plan for Bull Trout in the Clark Fork River Basin and Kootenai River Basin in Montana* (Montana Bull Trout Restoration Team 2000). This plan sets goals, objectives and criteria for bull trout restoration, outlines actions to meet those criteria, and establishes a structure to monitor implementation and evaluate effectiveness of the plan. Local plans provide direct guidance for local bull trout conservation efforts and include such documents as *An Integrated Stream Restoration and Native Fish Conservation Strategy for the Blackfoot River Basin* (FWP 2005), *Flathead Lake and River Co-Management Plan, 2001 – 2010* (FWP and Confederated Salish and Kootenai Tribes 2001), and Clark Fork River Native Salmonid Restoration Plan (Clark Fork Relicensing Team Fisheries Working Group 1998). As a listed species, the USFWS is responsible for developing federal bull trout recovery plans and designation of "critical habitats." Although critical bull trout habitat in Montana was designated by the USFWS in 2010, the Federal bull trout recovery plan is still in a draft stage and has yet to be finalized (as of January 2014; USFWS 2002a).

All major river systems in western Montana (except the Yaak River) are designated by the USFWS as Critical Habitat for bull trout (USFWS 2002b). Critical Habitats are specific geographic areas that the USFWS considers essential for conservation and recovery of bull trout and may require special management and protection to meet recovery objectives. Non-native trout species that are popular sport fish can compromise bull trout use of these areas through predation, competition and hybridization. The extent of these impacts vary by water and non-native species present. Historically bull trout have declined in number and distribution, with non-native trout often playing some role in the decline. However, recent management efforts have shown that the presence of non-native trout does not necessarily mean that bull trout populations will decline. Recent harvest restrictions and habitat improvements to enhance bull trout populations have resulted in some populations continuing to decline, some remaining stable (or ceasing the historical decline) and some increasing, all in the presence of non-native trout. Reasons for this variability may include interactions between the non-native trout and bull trout, as well as food web dynamics, and habitat condition or type. Because non-native trout occupy portions of all of the drainages listed as Critical Habitat, a challenge for FWP is to continue to provide recreational fisheries for non-native trout while protecting and establishing viable populations of bull trout. Balancing the 2 is particularly challenging because bull trout populations typically require open systems for migration and this makes them more susceptible to the negative impacts associated with non-native trout.

Management of non-native species using liberalized harvest limits or active suppression is not viewed as a necessary or practical approach to bull trout management in all waters designated by the USFWS as Critical Habitat. Many river reaches identified as Critical Habitat currently support few if any bull trout, or are only seasonally utilized as migratory corridors. Such waters may have substantial habitat alterations that make them unsuitable for viable bull trout populations for the foreseeable future (e.g., Upper Clark Fork River above Flint Creek), or a mix of habitat changes and established non-native trout populations which combined, limit the likelihood that non-native species can be effectively managed to benefit bull trout (e.g., lower Bitterroot River). These river reaches may also support recreationally and economically important trout fisheries that are highly valued destinations for Montanans and out-of-state visitors, and though FWP will continue to evaluate the issue and possible solutions, implementing management techniques (i.e., passive or active suppression) with uncertain benefit to bull trout is unwarranted at this time.

Management Plans

Clark Fork Relicensing Team Fisheries Working Group. 1998. Clark Fork River Native Salmonid Restoration Plan. 63 pp.

Montana Bull Trout Restoration Team. 2000. Restoration plan for bull trout in the Clark Fork River basin and Kootenai River basin, Montana. Montana Department of Fish, Wildlife & Parks, Helena, Montana. 116 pp.

Montana Fish Wildlife and Parks. 2005. An Integrated Stream Restoration and Native Fish Conservation Strategy for the Blackfoot River Basin.

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U. S. Fish and Wildlife Service. 2010. Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule. Federal Register / Vol. 75, No. 200 / Monday, October 18, 2010 / Rules and Regulations. Available at: http://www.fws.gov/pacific/bulltrout/CriticalHabitat.html

Bull Trout Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Habitat degradation and loss due to land and water management practices	Habitat degradation and loss due to land and water management practices	Encourage and support opportunities such as land purchases or conservation easements to conserve upland areas adjacent to occupied bull trout waters Restoration of degraded habitat and preservation of existing healthy habitat Use USFWS bull trout critical habitat document to designate important bull trout areas
Historical overharvest and eradication efforts	Historical overharvest and eradication efforts	Implement and enforce new harvest regulations where necessary
Introduction of non-native fishes resulting in competition, predation, and hybridization threats	Introduction of non-native fishes resulting in competition, predation, and hybridization threats	Increased management of non-native fishes Install barriers when necessary and manipulate fish populations to benefit bull trout when possible Prevent illegal introductions of fish species

Current Impacts	**Future Threats**	**Conservation Actions**
Loss of the migratory component of bull trout life history diversity by isolation and fragmentation of populations by both structural (e.g., dams) and environmental (e.g., thermal or pollution) barriers	Loss of the migratory component of bull trout life history diversity by isolation and fragmentation of populations by both structural (e.g., dams) and environmental (e.g., thermal or pollution) barriers	Reestablish connectivity between habitats isolated by constructed barriers
Ongoing poaching and accidental harvest due to misidentification	Ongoing poaching and accidental harvest due to misidentification	Education of bull trout identification and distribution
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

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Leary, R. F., F. W. Allendorf, and S. H. Forbes. 1993. Conservation genetics of bull trout in the Columbia and Klamath River drainages. Conservation Biology 7:856–865.

Leathe, S. A., and M. D. Enk. 1985. Cumulative effects of micro-hydro development on the fisheries of the Swan River drainage, Montana. Report prepared for Bonneville Power Administration, Division of Fish and Wildlife. 114 pp. + appendices.

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Columbia River Redband Trout (*Oncorhynchus mykiss gairdneri*) State Rank: S1
Global Rank: G5T4

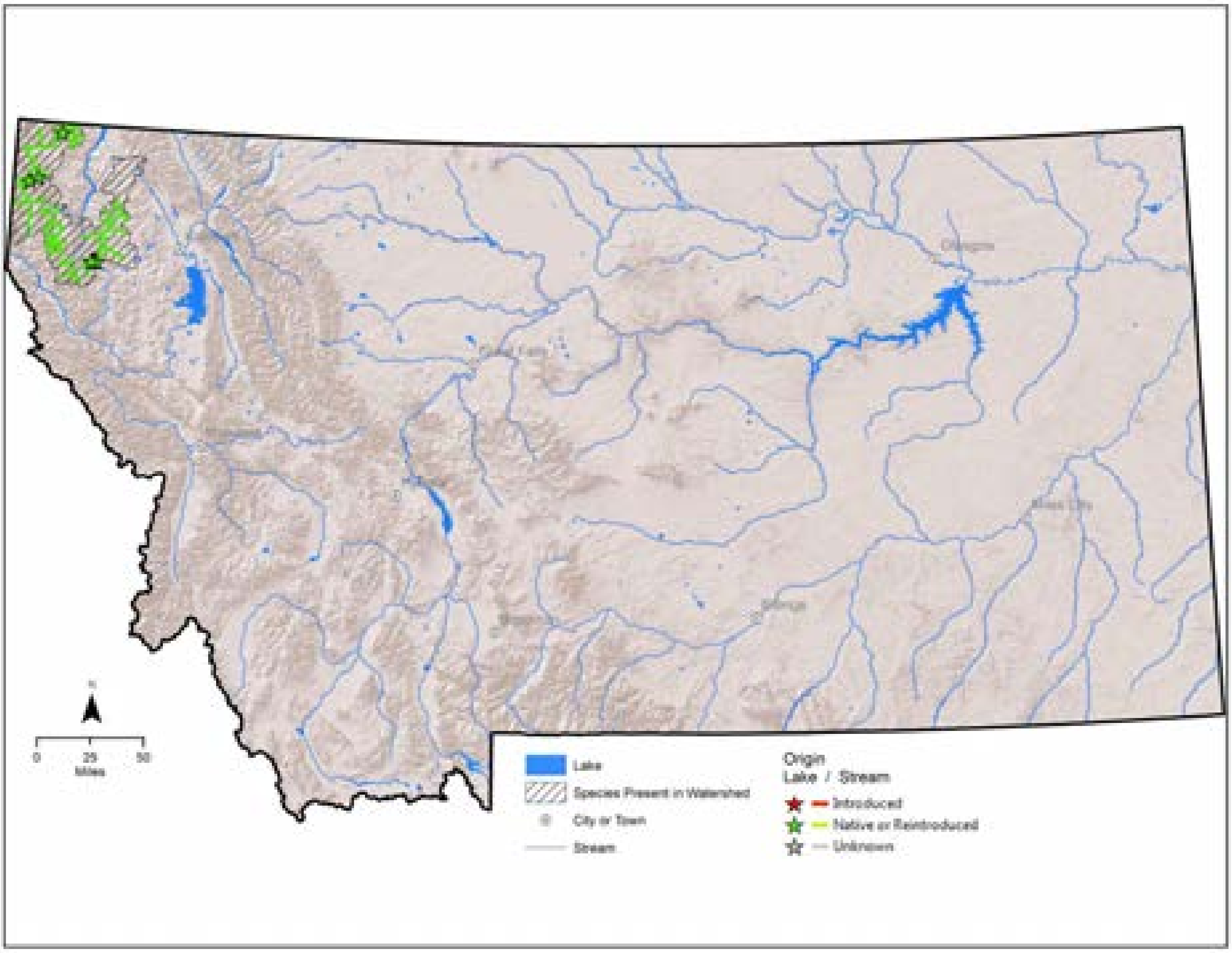

Figure 43. Distribution of Columbia River redband trout

Habitat

The seasonal habitat requirements of redband trout in the Kootenai River drainage in Montana were investigated during 1997 and 1998 (Hensler and Muhlfeld 1999; Muhlfeld 1999; Muhlfeld et al. 2001). Summer results demonstrated that juvenile and adult redband trout prefer deep microhabitats (more than 1.3 feet) with low to moderate velocities (less than 1.6 feet/second) adjacent to the thalweg. Conversely, age-0 redband trout select slow water (less than 0.3 feet/second) and shallow depths (less than 0.7 feet) located in lateral areas of the channel. All ages of redband trout strongly selected pools and avoided riffles; runs were used generally as expected (based on availability) by juveniles and adults and more than expected by age-0 redband trout. At the macrohabitat scale, a multiple regression model indicated that low-gradient, mid-elevation reaches with an abundance of complex pools are critical areas for the production of redband trout. Mean reach densities ranged from 0.008 to 0.08 fish/yd^2. During the fall and winter period, adult redband trout occupied small home ranges and found suitable overwintering habitat in deep pools with extensive amounts of cover in headwater streams. In Basin Creek, adult redband trout commenced spawning (e.g., redd construction) during June as spring flows subsided following peak runoff. Redband trout generally selected redd sites in shallow pool tailout areas (mean depth = 0.89 feet; range: 0.66 to 1.51) with moderate water velocities (mean velocity = 1.6 feet/second; range: 0.75 to 2.26 feet/second) dominated by gravel substrate.

Management
FWP and land managers (state, federal and private) are integral partners in the management of redband trout. Current management efforts include assessing and monitoring remaining populations; protecting important habitats; and developing long-term conservation strategies that may include removal of non-native trout and placement of barriers to prevent their return, and reintroduction of redband trout to streams where they have been lost. In addition, since 2002 FWP has been developing and testing a redband trout broodstock at FWP's Libby Isolation Facility and Murray Springs State Fish Hatchery. Established from a wild redband population, this brood is being developed to replace the stocking, for recreational purposes, of hatchery coastal rainbow trout or WCT, in drainages where redband trout are native. The effort will reduce the likelihood of additional hybridization of the species.

In the near term, the management direction for redband trout includes maintaining the existing distribution and genetic diversity of remaining populations, and developing conservation plans and projects that ensure long-term, self-sustaining persistence of the subspecies in Montana. Though recreational angling opportunities for the redband trout are currently limited outside of small streams, the development of a redband trout brood stock should provide future opportunities to establish recreational fisheries in closed-basin lakes in the Kootenai drainage. Likewise, efforts to secure and expand the distribution of existing populations and reintroduce them into streams where they have been lost will result in additional opportunities to pursue this unique native sport fish.

Management Plan
Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Columbia River Redband Trout Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede movement and reduce connectivity of habitat	Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede movement and reduce connectivity of habitat	Removal or modification of barriers to restore beneficial fish passage Support habitat restoration projects similar to those implemented by the Libby Dam Mitigation Project (Holderman et al., unknown year)
Habitat degradation and fragmentation due to development	Habitat degradation and fragmentation due to development	Encourage and support opportunities such as land purchases or conservation easements to conserve upland areas adjacent to occupied Columbia River redband trout waters

Current Impacts	Future Threats	Conservation Actions
Hybridization	Hybridization	Protect genetic composition by raising hatchery Columbia River redband trout Reduce stocking of non-native trout in sensitive areas Where appropriate and feasible, remove hybridized or competing populations of introduced species
Geographically restricted range	Geographically restricted range	Consider and investigate reintroduction efforts Consider preparing a management plan for the Columbia River redband trout or include it into other comprehensive taxonomic plans Identify specific areas where redband trout have been extirpated or severely reduced and work toward re-establishment of populations Survey areas where reintroduction efforts could occur
Range and forest management practices, including the use of pesticides	Range and forest management practices, including the use of pesticides	Encourage use BMPs for forest management activities to maintain diverse and resilient habitats within current range of redband trout Ensure species' requirements are included in forest plans Reduce stream intake of pesticides and herbicides Work with landowners and land management agencies to limit activities that may be detrimental to this species

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

Hensler, M. E., and C. C. Muhlfeld. 1999. Spawning ecology of redband trout in Basin Creek, Montana. A report to the Whirling Disease Foundation. Montana Fish, Wildlife & Parks, Bozeman, Montana.

Holderman, C., G. Hoyle, R. Hardy, P. Anders, P. Ward, and H. Yassien. Libby Dam Hydro-electric Project Mitigation: Efforts for Downstream Ecosystem Restoration. 9 pp.

Muhlfeld, C. C. 1999. Seasonal habitat use by redband trout (*Oncorhynchus mykiss gairdneri*) in the Kootenai River drainage, Montana. MS thesis, University of Idaho, Moscow, Idaho.

Muhlfeld, C. C., D. H. Bennett, and B. Marotz. 2001. Summer habitat use by redband trout in the Kootenai River drainage, Montana. North American Journal of Fisheries Management (February).

Lake Trout (*Salvelinus namaycush*)* State Rank: S2
Global Rank: G5

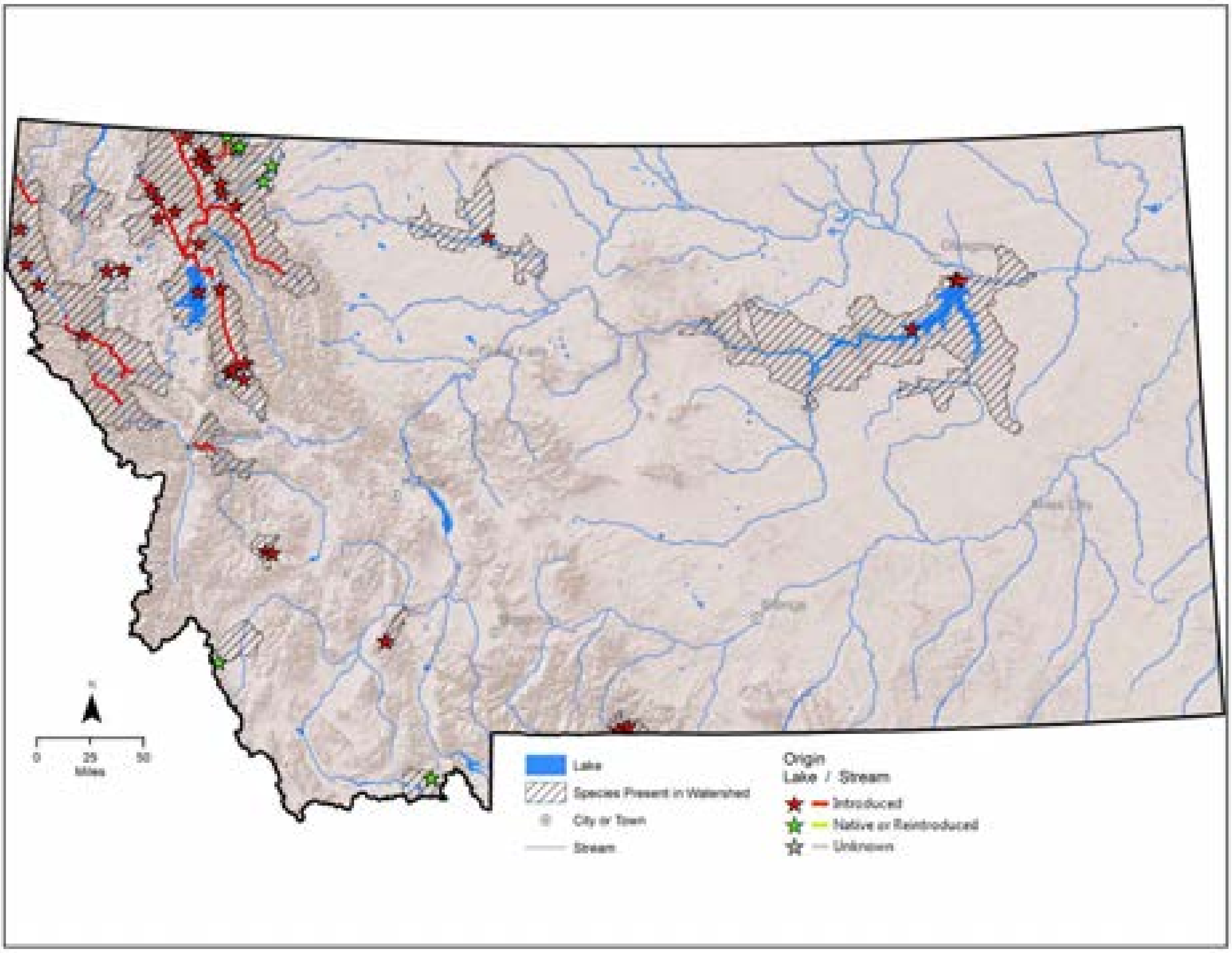

Figure 44. Distribution of lake trout

Habitat

While lake trout can be found in cold rivers and shallow lakes in the northern portion of its range (Scott and Crossman 1973) in Montana, native lake trout inhabit a few deep, cold lakes remaining from the Pleistocene glaciations. Montana's native lake trout populations remain in Waterton Lake, Glenns Lake, Cosley Lake, and St. Mary Lake in Glacier National Park, and Lower St. Mary Lake in the Blackfeet Indian Reservation. All of these waters are in drainages that eventually reach the Hudson Bay. Other native populations occur in Twin Lake in the Big Hole River drainage and Elk Lake in the Red Rock River drainage, both tributaries to the upper Missouri River drainage.

Lake trout prefer water temperatures in the 50- to 57-degree F range and, therefore, spend most of their lives in the deeper, benthic habitats with these water temperatures. Lake trout can occasionally be found in shallow water habitats, usually immediately after ice-out when surface waters are within their preferred temperature range. They spawn in the fall on the rocky substrate of the shoreline. Lake trout scatter or broadcast their spawn, a rarity in the trout group.

Management

Management recommendations within this document pertain only to the Elk Lake and Twin Lake populations. Though additional information is necessary to better describe and monitor the status Montana's native lake trout populations, the Elk Lake population is believed to be relatively secure and stable. Recent data from the Twin Lakes population indicates the population is small and suffers from sporadic successful recruitment. It appears that spawning habitat in the lake is limited and while fish are long-lived in the lake, they only successfully spawn periodically. It is possible that alterations to the outlet of the lake have contributed to the decline in available spawning habitat. Future projects are needed at Twin Lakes to improve spawning habitat and increase the frequency of successful spawning to stabilize the population and ensure its long-term persistence. The populations in Waterton, Cosley, Glenns, and St. Mary lakes are afforded the protection of their location within Glacier National Park. The Waterton population is believed to be abundant and stable.

Management Plan

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Lake Trout Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Genetic bottlenecks caused by small size of remaining populations	Genetic bottlenecks caused by small size of remaining populations	Reintroduce genetically pure native populations
Irregular recruitment	Irregular recruitment	Increased monitoring and surveying
Limiting factors unknown	Limiting factors unknown	Identify and remedy limiting factors
Little information on native populations	Little information on native populations	Consider preparing a management plan for the lake trout (native lakes) or include it into other comprehensive taxonomic plans
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

*Only native or reintroduced populations will be addressed.

Additional Citations

Scott, W. B., and E. J. Crossman. 1973. Freshwater Fishes of Canada. Bulletin 184. Fisheries Research Board of Canada, Ottawa. 966 pp.

<u>Paddlefish</u> (*Polyodon spathula*)

State Rank: S2
Global Rank: G4

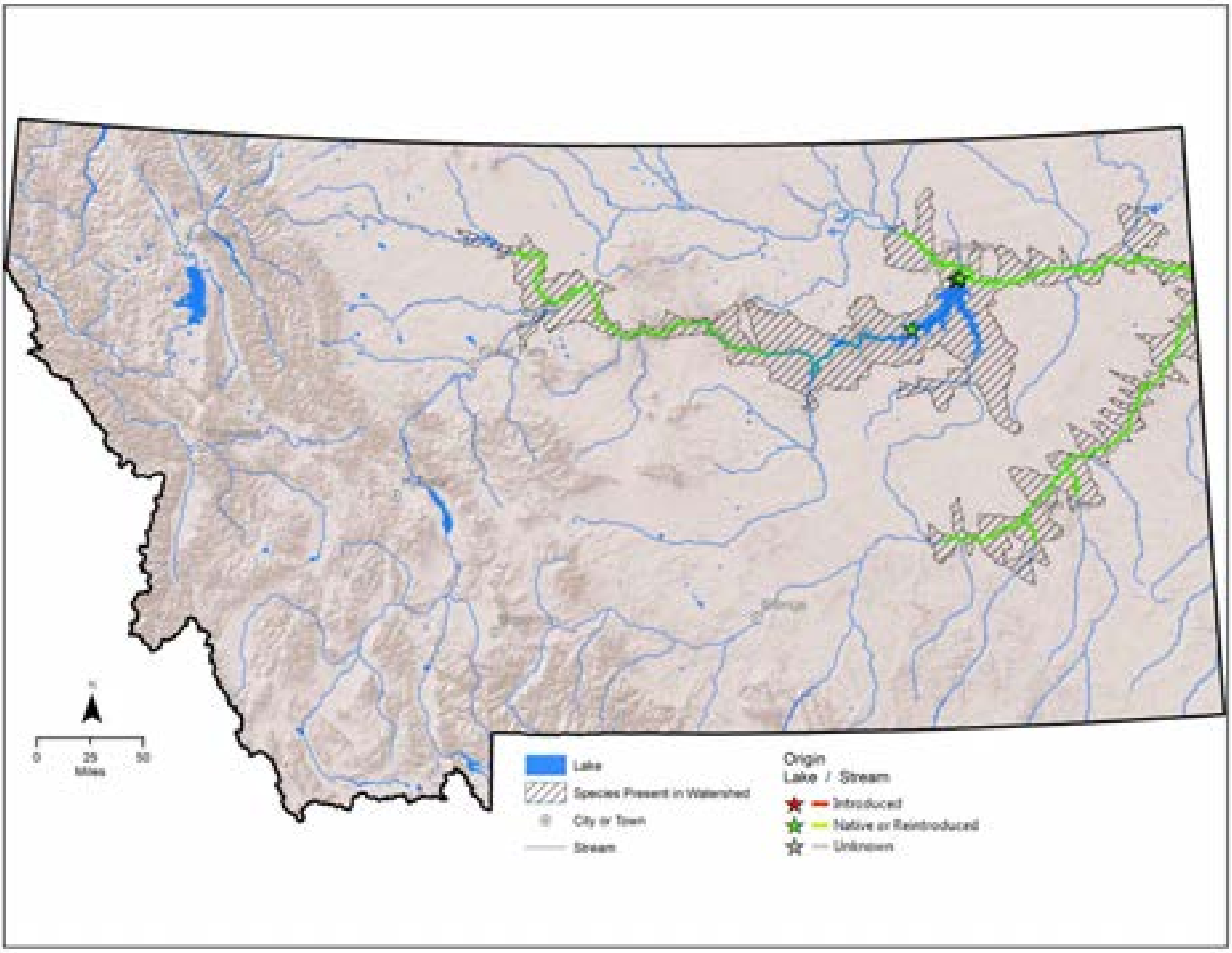

Figure 45. Distribution of paddlefish

<u>Habitat</u>

The paddlefish is a large river species that utilizes a wide variety of habitats seasonally and at different life stages. Optimal spawning habitat consists mainly of turbid, faster flowing main channel areas with gravel substrates, whereas feeding habitat is typically slower moving backwaters, side channels, and sloughs where their zooplanktonic food is more abundant. In the twentieth century, Montana's paddlefish have adapted successfully to feeding in Missouri River reservoir habitat, resulting in an increased population size over historical (pre-reservoir) levels (Scarnecchia et al. 1996). Young-of-the-year paddlefish utilize turbid headwater reaches of Fort Peck Reservoir (Kozfkay and Scarnecchia 2002) and Lake Sakakawea (Fredericks and Scarnecchia 1997) for particulate feeding. Larger juveniles and adults large enough to more effectively avoid predation (Parken and Scarnecchia 2002) filter feed throughout the reservoirs.

<u>Management</u>

Paddlefish stocks in Montana are adequate to support a recreational fishery. Current research and monitoring are designed to prevent over-harvest and insure a sustainable wild fishery. Paddlefish are managed as 2 naturally-reproducing stocks: the Yellowstone River and Missouri below Fort

Peck Dam, and the Missouri River above Fort Peck Dam. The Yellowstone stock is managed cooperatively through a joint management plan with the State of North Dakota. Harvest of this recreational fishery is accomplished by snagging, and targets for each stock are set on an annual basis. Since 2010 the target has been 1,000 fish for the Yellowstone/lower Missouri and 500 fish for the Missouri upstream of Fort Peck Reservoir. The harvest is closely monitored by biologists and creel clerks and can be closed immediately or with 24 hours notice, depending on the location. One unique aspect of the Yellowstone fishery is the presence of a caviar operation, which is run by the Glendive Chamber of Commerce. Proceeds from this operation are divided between the City of Glendive and FWP, with the State's share going to help fund research and management activities for the species.

The population and demographics of each stock is re-calculated annually for the purpose of evaluating the sustainability of the harvest. Details of the management goals and activities can be found in the Interstate Management plan "Management Plan for Montana and North Dakota Paddlefish Stocks and Fisheries" (North Dakota Game and Fish Department and Montana Fish, Wildlife & Parks 2008).

<u>Management Plans</u>

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

North Dakota Game and Fish Department and Montana Department of Fish, Wildlife & Parks. 2008. Management Plan for North Dakota and Montana Paddlefish Stocks and Fisheries. Bismarck, North Dakota and Helena, Montana.

Paddlefish Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Illegal harvest Overfishing	Illegal harvest Overfishing	Enforce existing harvest regulations
Loss of spawning habitat	Loss of spawning habitat	Maintain instream flows and spawning habitat in large rivers (especially the Yellowstone River and Missouri River above Fort Peck Reservoir)
Water depletions	Water depletions	Increased reservoir water retention during times of drought

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations
	Potential introduction of exotic competitors (e.g., bighead carp *Aristichthys nobilis*)	Improve public awareness of paddlefish conservation concerns and impacts of non-native species

Additional Citations

Fredericks, J. F., and D. L. Scarnecchia. 1997. The use of surface visual counts for estimating the relative abundance of age-0 paddlefish in Lake Sakakawea. North American Journal of Fisheries Management 17:1014–1018.

Kozfkay, J. R., and D. L. Scarnecchia. 2002. Year-class strength and feeding ecology of age-0 and age-1 paddlefish (*Polyodon spathula*) in Fort Peck Lake, Montana. Journal of Applied Ichthyology 18:601–607.

North Dakota Game and Fish Department and Montana Department of Fish, Wildlife & Parks. 2008. Management Plan for North Dakota and Montana Paddlefish Stocks and Fisheries. Bismarck, North Dakota and Helena, Montana.

Parken, C., and D. L. Scarnecchia. 2002. Predation on age-0 paddlefish by piscivorous fishes in a Great Plains reservoir. North American Journal of Fisheries Management 22:750–759.

Scarnecchia, D. L., P. A. Stewart, and G. Power. 1996. Age structure of the Yellowstone-Sakakawea paddlefish stock, 1963–1993, in relation to reservoir history. Transactions of the American Fisheries Society 125:291–299.

Pallid Sturgeon (*Scaphirhynchus albus*) State Rank: S1
Global Rank: G2

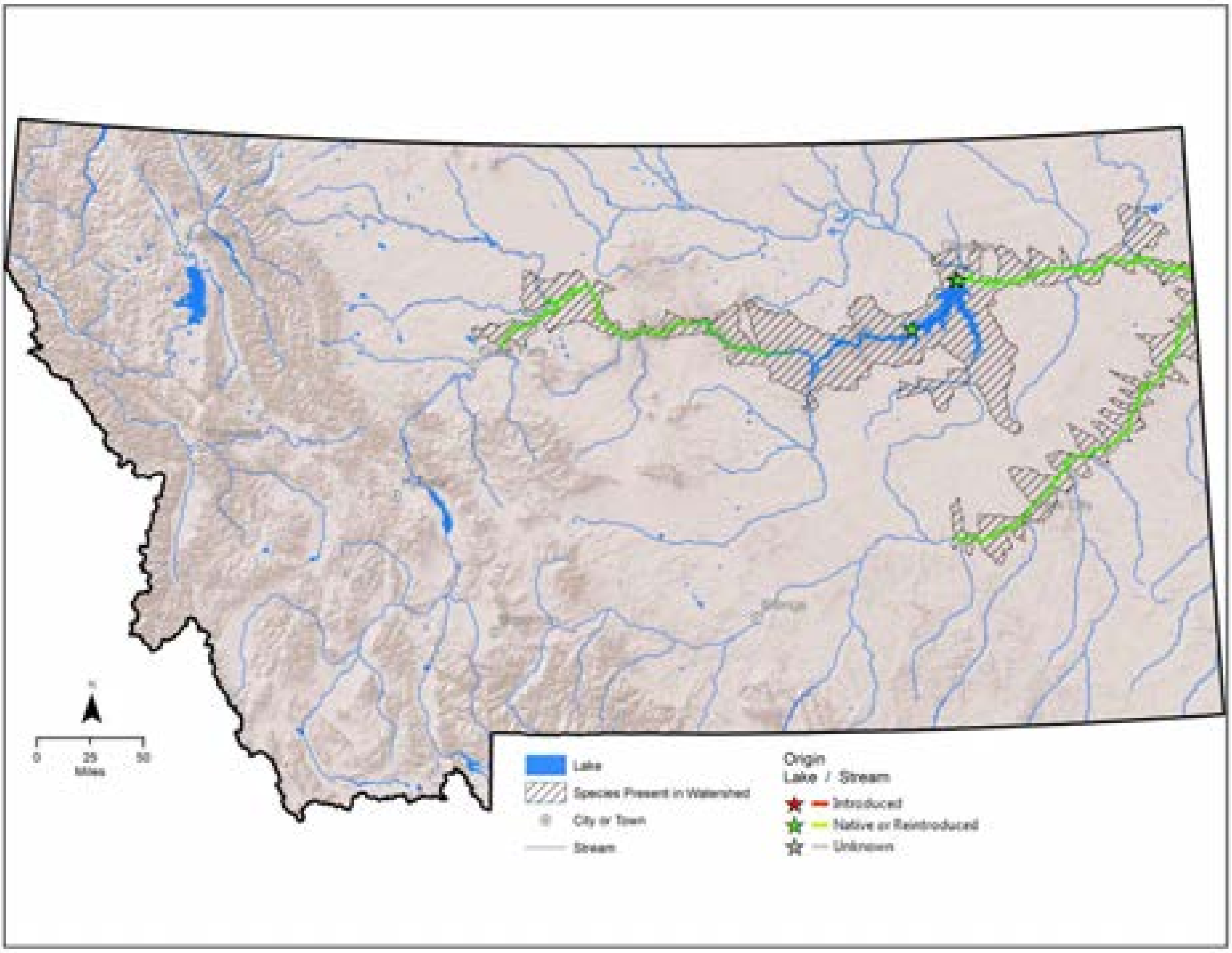

Figure 46. Distribution of the pallid sturgeon

Habitat

Pallid sturgeon use large, turbid rivers over sand and gravel bottoms, usually in strong current. In Montana, pallid sturgeon use large turbid streams including the Missouri and Yellowstone Rivers (Brown 1971; Flath 1981). They also use all channel types, primarily straight reaches with islands (Bramblett 1996). They primarily use areas with substrates containing sand (especially bottom sand dune formations) and fines (93% of observations; Bramblett 1996). Stream bottom velocities range between 0.0 and 4.49 feet per second, with an average of 2.13 feet per second (Bramblett 1996). Depths used are 2.0 to 47.57 feet, averaging 10.83 feet, and they appear to move deeper during the day (Bramblett 1996). Channel widths from 360 to 3600 feet are used and average 1,063 feet (Bramblett 1996). Water temperatures used range from 37 to 68 degrees F. (Tews 1994; Bramblett 1996). Water turbidity ranges from 12 to 6,400 NTU (Turbidity Units) (Tews 1994).

Pallid sturgeon are long-lived (50+ years), highly migratory, and require large, turbid, relatively warm, and free-flowing rivers to successfully reproduce. The construction of dams and corresponding impoundments on the upper Missouri River beginning in the early 1900's, (e.g., Canyon Ferry and Fort Peck reservoirs, and North Dakota's Lake Sakakawea), Yellowstone River (e.g., Intake Diversion Dam), and associated dammed tributaries (e.g., Yellowtail, Tongue and Tiber reservoirs on the Bighorn, Tongue and Marias rivers) have impeded successful spawning and recruitment of pallid sturgeon in Montana. Dams and impoundments block migration routes, alter natural spawning cues such as discharge, temperature and turbidity, fragment populations (i.e., above Fort Peck Reservoir), and alter habitats necessary for survival of fry.

Management

Management plans and conservation efforts for pallid sturgeon are developed and implemented through a USFWS-coordinated Recovery Team that includes state- and federally-appointed staff. Short-term management objectives for the species include preventing local extirpation through population supplementation with hatchery-propagated fish, providing adult upstream passage at Intake Diversion Dam on the Yellowstone River, and developing strategies to address impacts to spawning and recruitment related to Fort Peck and Sakakawea reservoirs. Long-term and natural persistence of pallid sturgeon will require changes to reservoir operations that result in reestablishment of spawning cues and habitats necessary for fry survival. Though released hatchery reared juvenile pallid sturgeon number in the thousands, it is currently estimated that fewer than 120 adult pallid sturgeon persist in the upper Missouri and Yellowstone rivers above Lake Sakakawea.

Beginning in 1996, research efforts focused on pallid sturgeon recovery and preserving the pallid sturgeon genetic pool through collection of wild gametes and subsequent stocking of hatchery reared juvenile sturgeon. The primary purpose of the stocking program is to preserve the genetic pool and reconstruct an optimal population size within the habitat's carrying capacity (Krentz 1997; American Fisheries Society (AFS) website 2013). In 2000 USFWS completed an ESA consultation with USACOE regarding operation of Missouri River dams. Through an informal agreement the BOR agreed to provide a dominant discharge spring pulse out of the Tiber Reservoir every 4 to 5 years for Missouri River fish migrations that could help the Upper Missouri River pallid sturgeon population. To address pallid sturgeon passage and entrainment on the Yellowstone River, the USFWS has begun consultation with BOR regarding problems at the Intake Diversion Dam. The future for pallid sturgeon recovery may continue to be uncertain even after positive changes have been implemented because pallid sturgeon populations are so depleted and the newly stocked fish will take at least 15 years before the females first reach sexual maturity and begin to spawn. Therefore, it is important to realize that immediate evaluations are impractical, and recovery will take a dedicated, long-term commitment (AFS website 2013). Implementing the pallid sturgeon recovery program in this area is a multistate and multiagency task. To facilitate this, the Montana/Dakota Pallid Sturgeon Work Group was organized in 1993. The group is composed of representatives from FWP, South Dakota Game, Fish and Parks Department, USFWS, USACOE, BOR, Western Area Power Administration, and PPL-Montana, and acts in an advisory role identifying research needs and funding sources, developing work plans, and providing an opportunity for communication between biologists and agency personnel (AFS website 2013).

Management Plans
Dryer, M. P., and A. J. Sandvol. 1993. Recovery plan for the pallid sturgeon (*Scaphirhynchus albus*). U.S. Fish and Wildlife Service. Bismarck, North Dakota. 55 pp. *Currently under revision*.

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Upper Basin Workgroup. 2008. Memorandum of Understanding for Upper Basin Pallid Sturgeon Recovery Implementation.

Pallid Sturgeon Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Habitat modifications such as dams prevent movement to spawning and feeding areas, alter flow regimes, turbidity, and temperature, and reduce food supply	Habitat modifications such as dams prevent movement to spawning and feeding areas, alter flow regimes, turbidity, and temperature, and reduce food supply	Protect minimum instream flow reservations to ensure that the pallid sturgeon population will not be impacted Restore more natural flow and temperature conditions in the rivers below mainstream and tributary dams
Heavy metals and organic compounds may affect reproduction	Heavy metals and organic compounds may affect reproduction	Work with watershed groups, agencies, organizations, and the public to identify and reduce point source pollutants
Hybridization with shovelnose sturgeon, possibly caused by reductions in habitat diversity	Hybridization with shovelnose sturgeon, possibly caused by reductions in habitat diversity	Support research to better understand hybridization issues as they relate to habitat
Low population numbers	Low population numbers	Establish multi-aged pallid sturgeon populations in the Middle Missouri, Lower Missouri, and Yellowstone rivers to prevent extinction Improve knowledge of pallid sturgeon life cycle requirements and continue to research limiting factors affecting its existence

Current Impacts	Future Threats	Conservation Actions
Upstream and nearby land use practices may degrade water quality	Upstream and nearby land use practices may degrade water quality	Support government and private conservation activities that encourage and support sustainable land management practices in riparian areas Work with landowners and land management agencies to limit activities that may be detrimental to this species
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

American Fisheries Society, Montana Chapter website. 2013. http://www.fisheriessociety.org/AFSmontana/PallidSturgeon.html

Bramblett, R. G. 1996. Habitats and movements of pallid and shovelnose sturgeon in the Yellowstone and Missouri rivers, Montana and North Dakota. Ph.D. dissertation, Montana State University, Bozeman, Montana. 210 pp.

Brown, C. J. D. 1971. Fishes of Montana. Big Sky Books. Montana State University, Bozeman, Montana.

Flath, D. L. 1981. Vertebrate species of special concern. Montana Department of Fish, Wildlife & Parks. 74 pp.

Krentz, Steven. 1997. Stocking/augmentation plan for the pallid sturgeon (*Scaphirhynchus albus)* in Recovery Priority Management Areas 1 and 2 in Montana and North Dakota. U.S. Fish and Wildlife Service. Bismarck, North Dakota. 38 pp.

Tews, A. 1994. Pallid sturgeon and shovelnose sturgeon in the Missouri River from Fort Peck Dam to Lake Sacagawea and in the Yellowstone River from Intake to its mouth. Fort Peck Pallid Sturgeon Study. Submitted to U.S. Army Corps of Engineers, Planning Branch, Omaha, Nebraska.

Pearl Dace (*Margariscus margarita*)

State Rank: S2
Global Rank: G5

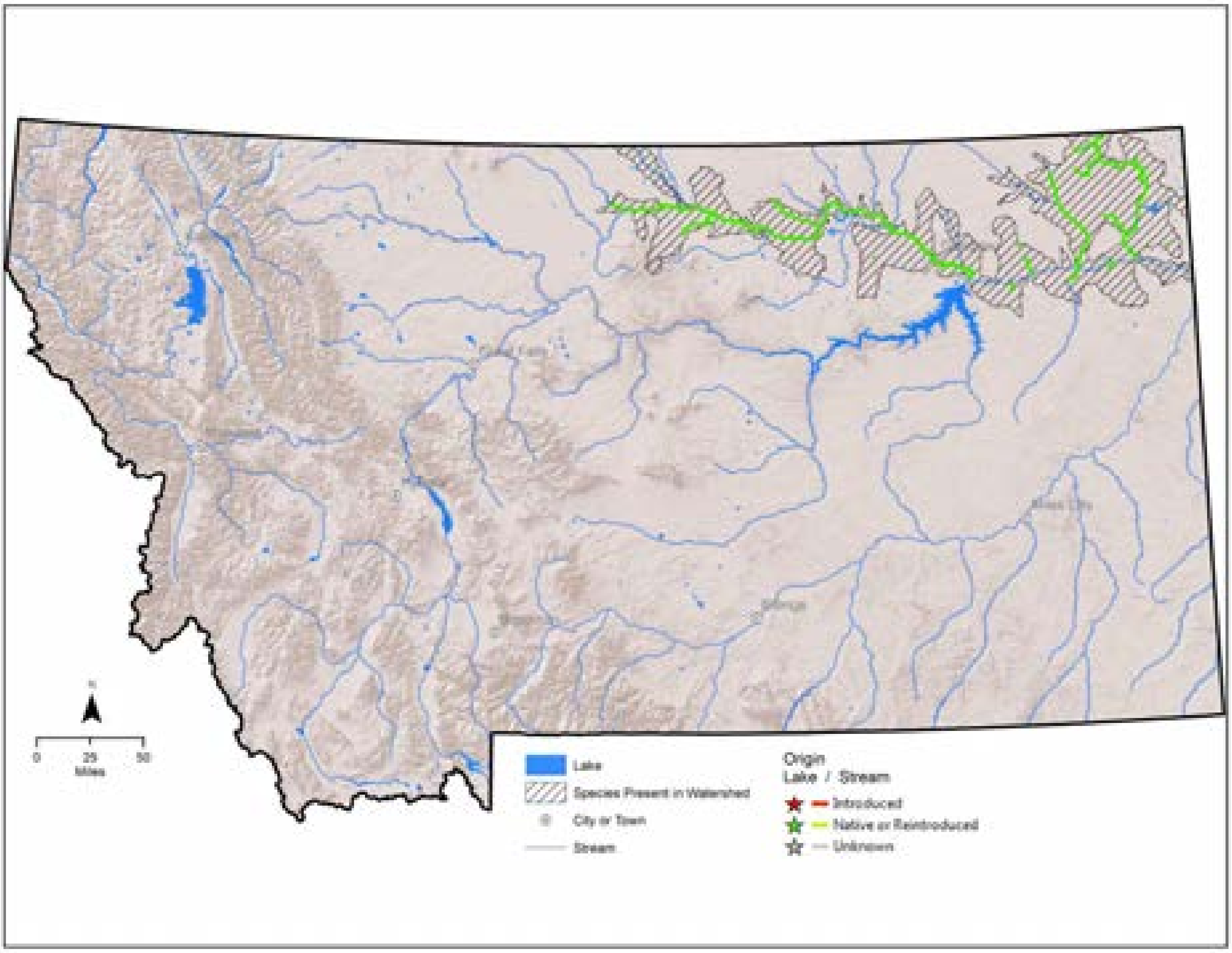

Figure 47. Distribution of the pearl dace

Habitat

Pearl dace occur in lakes, cool bog ponds, creeks, and cool springs (Scott and Crossman 1973). Little habitat-related information exists for this species in Montana. At 4 stream locations where pearl dace were captured in northeastern Montana, average stream widths ranged from 17.7 to 38.7 feet, average thalweg depths ranged from 1.3 to 4.6 feet, substrates ranged from 53 to 100% fine substrate (less than 0.06 mm), and aquatic macrophytes were sparse to very heavy (less than 10 to more than 75% coverage; Bramblett, unpublished data). Eleven fish species were associated with pearl dace in 7 collections from 4 sites on 4 Montana streams.

Pearl dace appear to prefer cool to cold water temperatures. In Canada, pearl dace were more often found to co-occur with brook trout (*Salvelinus fontinalis*) and mottled sculpin (*Cottus bairdi*) at water temperatures of 60.4 to 61.9 degrees F than with smallmouth bass (*Micropterus dolomieu*) and rock bass (*Ambloplites rupestris*) at 69.4 to 70.7 degrees F (Becker 1983). The upper lethal temperature for pearl dace was found to be 88.0 degrees F (Becker 1983). In the southernmost part of their range in Maryland and Virginia, pearl dace were found in streams that were cool in summer and warm in winter, with substantial spring-water input (Tsai and Fava

1982). In Montana, pearl dace were captured in streams with daytime water temperatures from July through September ranging from 49.3 to 73.6 degrees F (Bramblett, unpublished data).

Management Plan

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Pearl Dace Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Anthropogenic stressors that increase water temperatures	Anthropogenic stressors that increase water temperatures	Work with landowners and land management agencies to limit activities that may be detrimental to this species
Collected by anglers seeking bait minnows	Collected by anglers seeking bait minnows	Educate anglers on species identification and importance of native fish
Limited distribution in Montana renders it vulnerable to extirpation from the state	Limited distribution in Montana renders it vulnerable to extirpation from the state	Consider preparing a management plan for the pearl dace or include it into other comprehensive taxonomic plans Fish surveys supported by voucher specimens should be conducted in streams across the range (including areas of historical records) of the species to better determine its geographic range
Populations vulnerable to predation and competition	Populations vulnerable to predation and competition	Reduce stocking of non-native fish (especially pike) that may compete with or prey on this species
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

Becker, G. C. 1983. Fishes of Wisconsin. The University of Wisconsin Press, Madison, Wisconsin.

Scott, W. B., and E. J. Crossman. 1973. Freshwater fishes of Canada. Bulletin 184, Fisheries Research Board of Canada, Ottawa.

Tsai, C., and J. A. Fava. 1982. Habitats and distribution of the pearl dace (*Semotilus margarita* [Cope]), in the Potomac River drainage. Virginia Journal of Science 33:201–205.

Sauger (*Sander canadensis*) State Rank: S2
Global Rank: G5

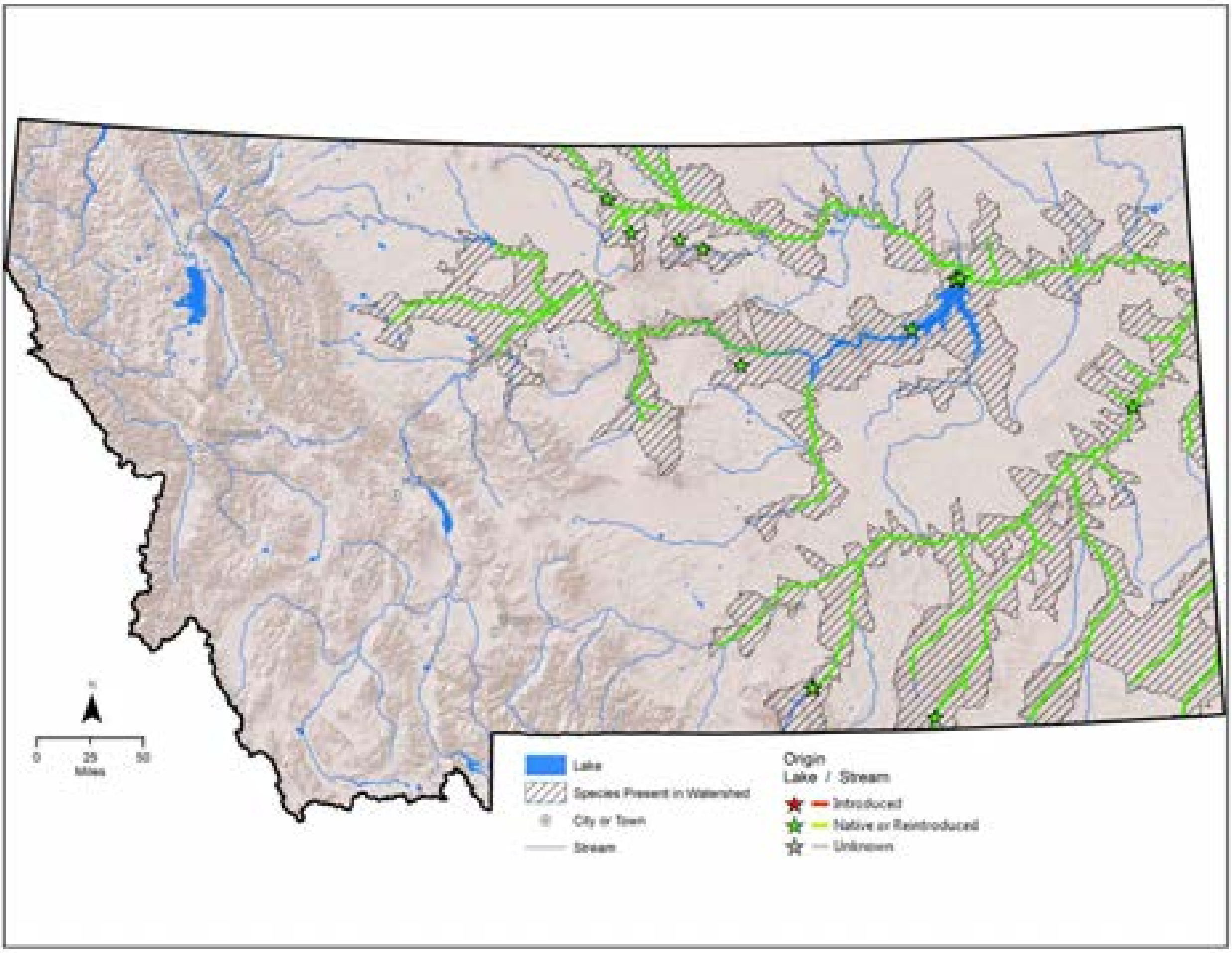

Figure 48. Distribution of sauger

Habitat

Sauger typically occur in large turbid rivers and shallow turbid lakes (Becker 1983). Turbidity is an important delineator of suitable habitat for sauger. Physiological adaptations, such as a highly advanced light-gathering retina, allow sauger to thrive in low-light environments (Ali and Anctil 1977; Crance 1987). At cool water mesotherms, sauger have a fairly wide range of thermal tolerance with occupied temperatures ranging from 33.8 to 86.0 degrees F and a physiological optimum of 64.4 to 75.2 degrees F (Crance 1987; Carlander 1997).

Sauger are heavily dependent throughout their life histories on unimpeded access to the wide diversity of physical habitats that are present in large river systems. They are considered to be the most migratory percid (Collette 1977). Their migratory behavior, which is primarily related to spawning, is well documented throughout their range with annual movements of up to 373 miles between spawning and rearing habitats (Nelson 1968; Collette et al. 1977; Penkal 1992; Pegg et al. 1997; Jaeger 2004). Sauger are highly selective for spawning sites and commonly travel long distances to aggregate in a relatively few discrete areas to spawn (Nelson 1968; Nelson 1969; Gardner and Stewart 1987; Penkal 1992). Although primary stem spawning does occur (Jaeger

2004), it has been suggested that sauger populations are strongly reliant on access to large tributaries for spawning (Nelson 1968; Gardner and Stewart 1987; Penkal 1992; Hesse 1994; McMahon 1999). Spawning locations are associated with unique geomorphic features, such as bluff pools and bedrock reefs, and rocky substrates over which sauger broadcast their eggs (Nelson 1968; Gardner and Stewart 1987; Hesse 1994; Jaeger 2004). During a 10- to 12-day period following emergence, it is thought that larval sauger drift long distances downstream - up to 186 miles - prior to gaining the ability to maneuver horizontally and begin feeding (Nelson 1968; Penkal 1992; McMahon 1999). Juveniles rear in side channels, backwaters, oxbows, and other off-channel habitats during spring and summer before shifting to primary channel habitats in autumn (Gardner and Berg 1980; Gardner and Stewart 1987; Hesse 1994). Adult sauger also use off-channel and channel-margin habitats during the spring and early summer periods of high flow and turbidity, and then move to deeper primary channel habitats in late summer and autumn as decreasing flows and turbidities cause suitable off-channel habitats to become unavailable (Hesse 1994; Jaeger 2004).

Management

Sauger have become rare or absent in a number of larger rivers in Montana (e.g., Judith, Poplar, Big Horn and Tongue rivers), due in part to dams, diversions and impoundments that have altered temperature, flow regime and favored river habitats, and obstruct migrations. Additional management concerns include entrainment in irrigation canals, streambank alterations, and competition or hybridization with non-native species (e.g., smallmouth bass and walleye). Though it remains widely distributed in the Missouri and Yellowstone rivers, and is common in some locations, the sauger is listed as a Montana SOC owing to an estimated 50% reduction in distribution and widespread threats.

The sauger has received considerable management attention since reductions in abundance were first noted in the drought years in the 1980's. Several studies have since been completed to better understand the species overall status, habitat needs, movement patterns and threats. These assessments have provided important information on the impact of habitat alteration on sauger and other prairie river species (e.g., blue sucker, sturgeon, paddlefish), and recent restoration efforts have been directed towards reducing entrainment in irrigation canals, and promoting movement in the Tongue River through construction of a by-pass channel around an irrigation dam. Modifying dam operations to promote more natural hydrographs and temperatures on mainstem and tributary rivers will continue to be important but difficult issue to address. Hybridization between sauger and non-native walleye is also a concern, and the issue is being preemptively addressed in the Bighorn River system through stocking of sterile walleye in Yellowtail Reservoir.

On larger rivers, spring and fall aggregations of sauger provide for popular fisheries, though overall, less than 0.2% of statewide angling pressure is targeted towards the species. Standard angling limits for sauger are 5 daily and 10 in possession, though to protect some populations from the potential stress of over-harvest, in many locations limits are reduced to one daily and 2 in possession.

Management Plan
Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Sauger Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Barriers that negatively influence spawning movement patterns and larval drift	Barriers that negatively influence spawning movement patterns and larval drift	Improve passage at several irrigation-related migratory barriers Removal of primary stem and tributary impoundments
Channelization and loss of side channel habitat for larval and juvenile sauger	Channelization and loss of side channel habitat for larval and juvenile sauger	Install fish screens and return structures to minimize entrapment of fish in irrigation canals
Hybridization with walleye	Hybridization with walleye	Continue surveying and monitoring of species Stock triploid walleye
Negative interactions with other species such as walleye and smallmouth bass	Negative interactions with other species such as walleye and smallmouth bass	Research to better understand interaction between sauger and non-native species Supplemental stocking of native sauger to replace decreased walleye stocks
Overexploitation	Overexploitation	Continue to manage harvest as needed
Reservoir operation that alters the natural hydrograph	Reservoir operation that alters the natural hydrograph	Flow releases from dams can be regulated throughout the year to maximize spawning success and year-class strength of sauger (Nelson 1968; Walburg 1972) Preserve natural hydrographs, natural processes of channel formation, and high degrees of connectivity where sauger currently exist Restock sauger in oxbows for dispersal into river

Current Impacts	Future Threats	Conservation Actions
Water withdrawals resulting in low river flows	Water withdrawals resulting in low river flows	Minimize the diversion of water from river channels and limit processes such as channelization and streambank armoring that result in loss of important off-channel habitats Work with landowners and other agencies to limit activities that may be detrimental to this species
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

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Gardner, W. M., and P. A. Stewart. 1997. The fishery of the lower Missouri River, Montana. Montana Department of Fish, Wildlife & Parks report, FW-2-R.

Hesse, L. W. 1994. The status of Nebraska fishes in the Missouri River. 6. Sauger (Percidae: *Stizostedion canadense*). Transactions of the Nebraska Academy of Sciences 21:109–121.

Jaeger, M. E. 2004. An empirical assessment of factors precluding recovery of sauger in the Lower Yellowstone River: movement, habitat use, exploitation and entrainment. MS thesis, Montana State University, Bozeman, Montana.

McMahon, T. E. 1999. Status of sauger in Montana. Montana Fish, Wildlife & Parks report, Helena, Montana.

Nelson, W. R. 1968. Reproduction and early life history of sauger (*Stizostedion canadense*) in Lewis and Clark Lake. Transactions of the American Fisheries Society 97:159–166.

Nelson, W. R. 1969. Biological characteristics of the sauger population in Lewis and Clark Lake. U. S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Technical Paper 21.

Pegg, M. A., P. W. Bettoli, and J. B. Layzer. 1997. Movement of sauger in the lower Tennessee River determined by radio telemetry, and implications for management. North American Journal of Fisheries Management 17:763–768.

Penkal, R. F. 1992. Assessment and requirements of sauger and walleye populations in the Lower Yellowstone River and its tributaries. Montana Department of Fish, Wildlife & Parks report, Helena, Montana.

Walburg C. H. 1972. Some factors associated with fluctuation in year-class strength of sauger, Lewis and Clark Lake, South Dakota. Transactions of the American Fisheries Society 101:311-316.

Shortnose Gar (*Lepisosteus platostomus*)

State Rank: S1
Global Rank: G5

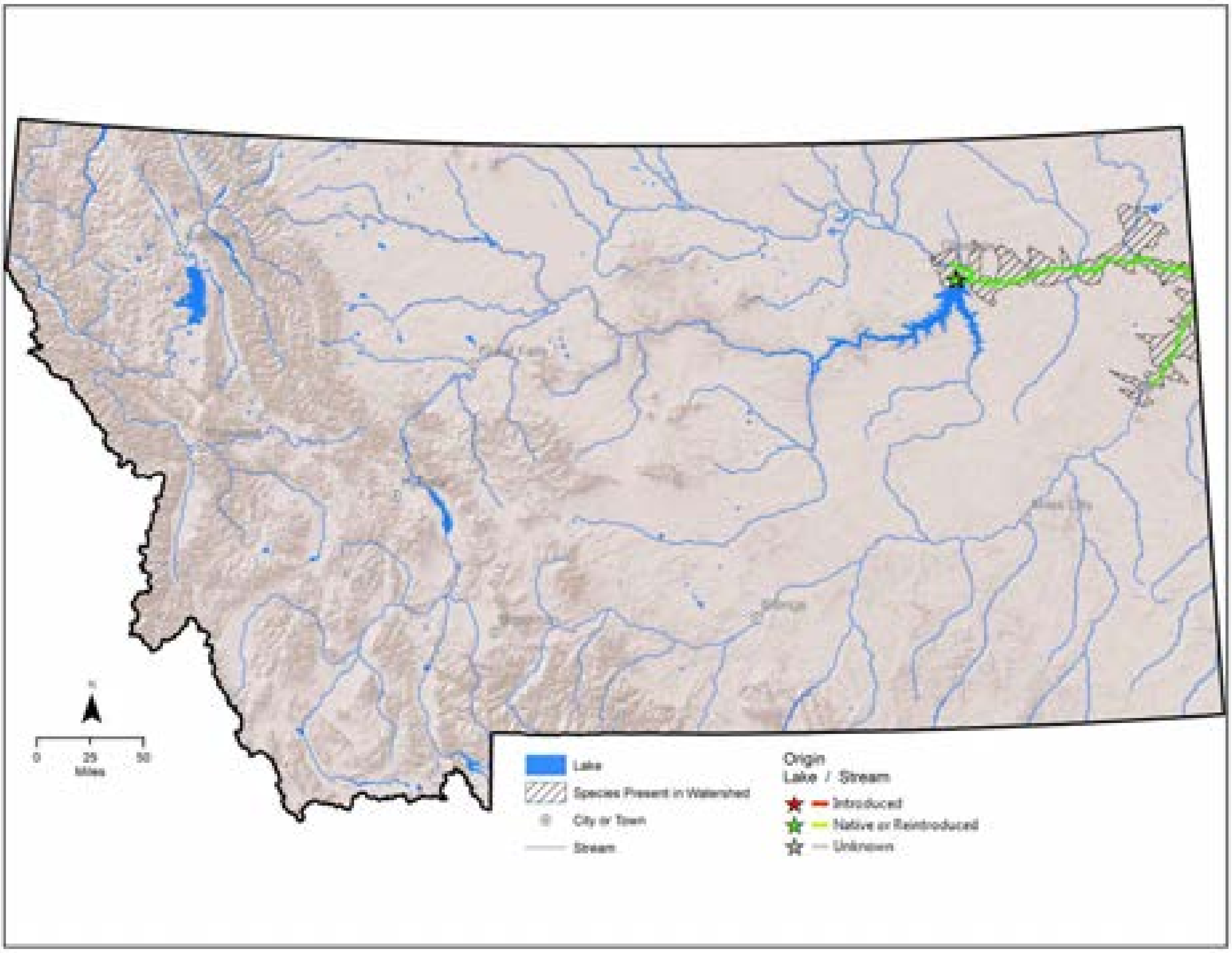

Figure 49. Distribution of shortnose gar

Habitat

Due to its limited distribution little is known about the shortnose gar within Montana. The shortnose gar is typically found in large rivers, quiet pools, backwaters, and oxbow lakes. It has a higher tolerance to turbid water than the other 4 gar species found in North America (AFS website 2013). Gar also have the unique ability to supply a highly vascularized swim bladder with supplemental oxygen by engaging in a behavior of "breaking," where air is gulped at the surface (Pflieger 1975). This allows gar to occupy waters with extremely low dissolved oxygen concentrations, which would not be suitable for most other fish inhabitation.

Management Plan

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Shortnose Gar Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Backwater habitat filled in for agriculture and modified by lack of channel maintenance flows	Backwater habitat filled in for agriculture and modified by lack of channel maintenance flows	Increase conservation initiatives for backwater sloughs and channels
Cold water release, lack of turbidity, and artificial hydrograph below Fort Peck Dam may inhibit abundance in the lower Missouri River	Cold water release, lack of turbidity, and artificial hydrograph below Fort Peck Dam may inhibit abundance in the lower Missouri River	Manage water regimes to better represent natural water regimes
Limited information in Montana	Limited information in Montana	Consider preparing a management plan for the shortnose gar or include it into other comprehensive taxonomic plans Increase survey and monitoring efforts

Additional Citations

American Fisheries Society Montana Chapter website: 2013. http://www.fisheriessociety.org/AFSmontana/ShortnoseGar.html

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Department of Conservation, Jefferson City, Missouri.

<u>Sicklefin Chub</u> (*Hybopsis meeki*)

State Rank: S1
Global Rank: G3

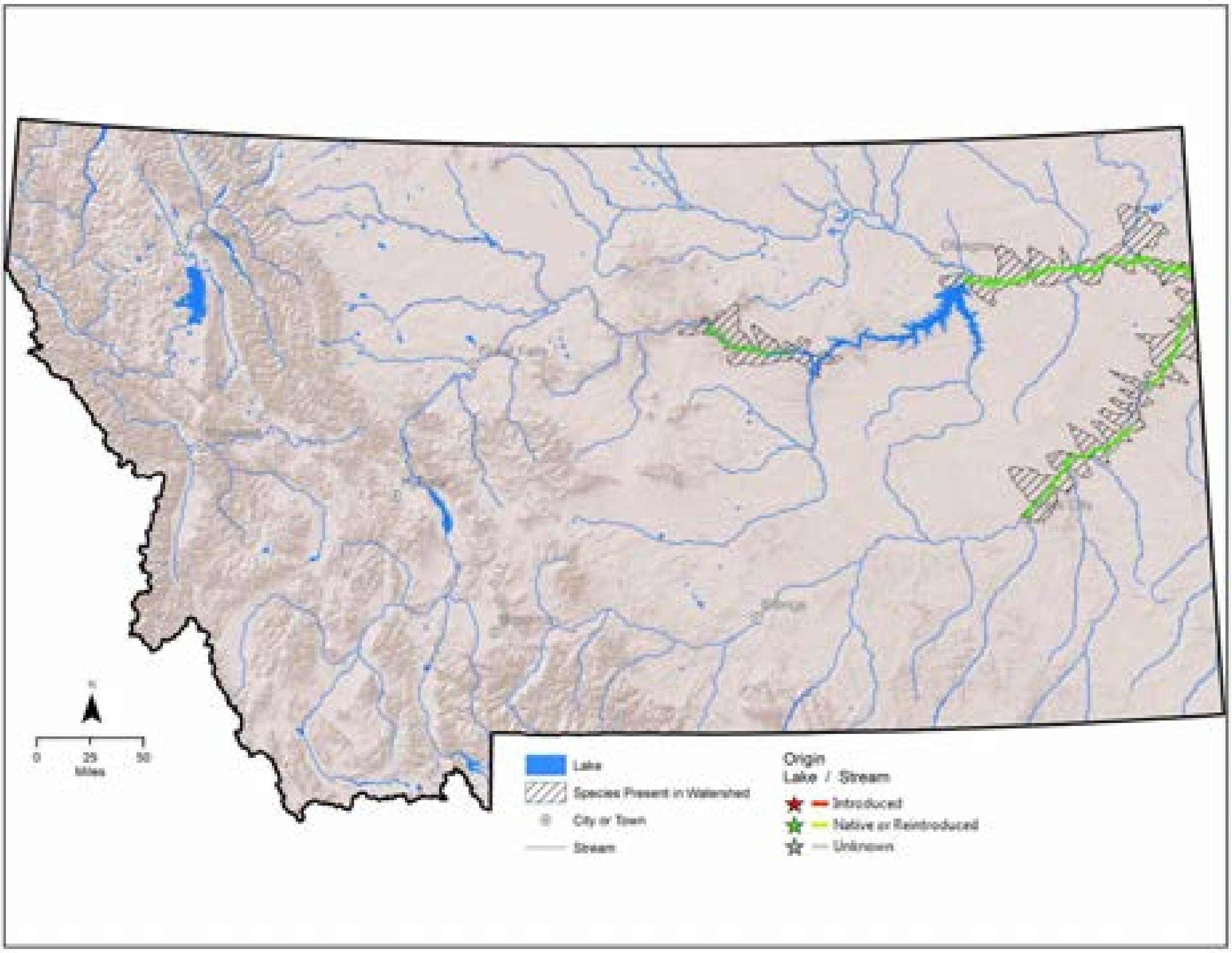

Figure 50. Distribution of sicklefin chub

<u>Habitat</u>

Sicklefin chub are strictly confined to the main channels of large, turbid rivers where they live in a strong current over a bottom of sand or fine gravel (Pflieger 1975).

Unlike the sturgeon chub, all of the Montana captures have been from only the Missouri and Yellowstone rivers, indicating a strong preference for large turbid rivers (AFS website 2013).

<u>Management Plan</u>

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Sicklefin Chub Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Channelization of the Missouri River due to irrigation operations and development	Channelization of the Missouri River due to irrigation operations and development	Work with landowners and other agencies to limit activities that may be detrimental to this species
Decreased range and abundance of prey aquatic insect larvae due to dam construction and snag removal	Decreased range and abundance of prey aquatic insect larvae due to dam construction and snag removal	Increased monitoring and survey efforts in eastern Montana to monitor population trends and range expansion or loss and collect additional information on life history and ecology
Habitat alteration by dam operations, reducing turbidities and/or altering temperature and flow regimes	Habitat alteration by dam operations, reducing turbidities and/or altering temperature and flow regimes	Restore more natural flow and temperature conditions in the rivers below mainstream and tributary dams
Predation by non-native fish	Predation by non-native fish	Determine the effect of non-native fish on sicklefin chub
Removal of wild individuals used for bait fish	Removal of wild individuals used for bait fish	Educate the public on the identification and importance of native species

Additional Citations

American Fisheries Society, Montana Chapter Website. 2013. http://www.fisheriessociety.org/AFSmontana/SicklefinChub.html

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Department of Conservation, Jefferson City, Missouri.

Sturgeon Chub (*Hybopsis gelida*)

State Rank: S2S3
Global Rank: G3

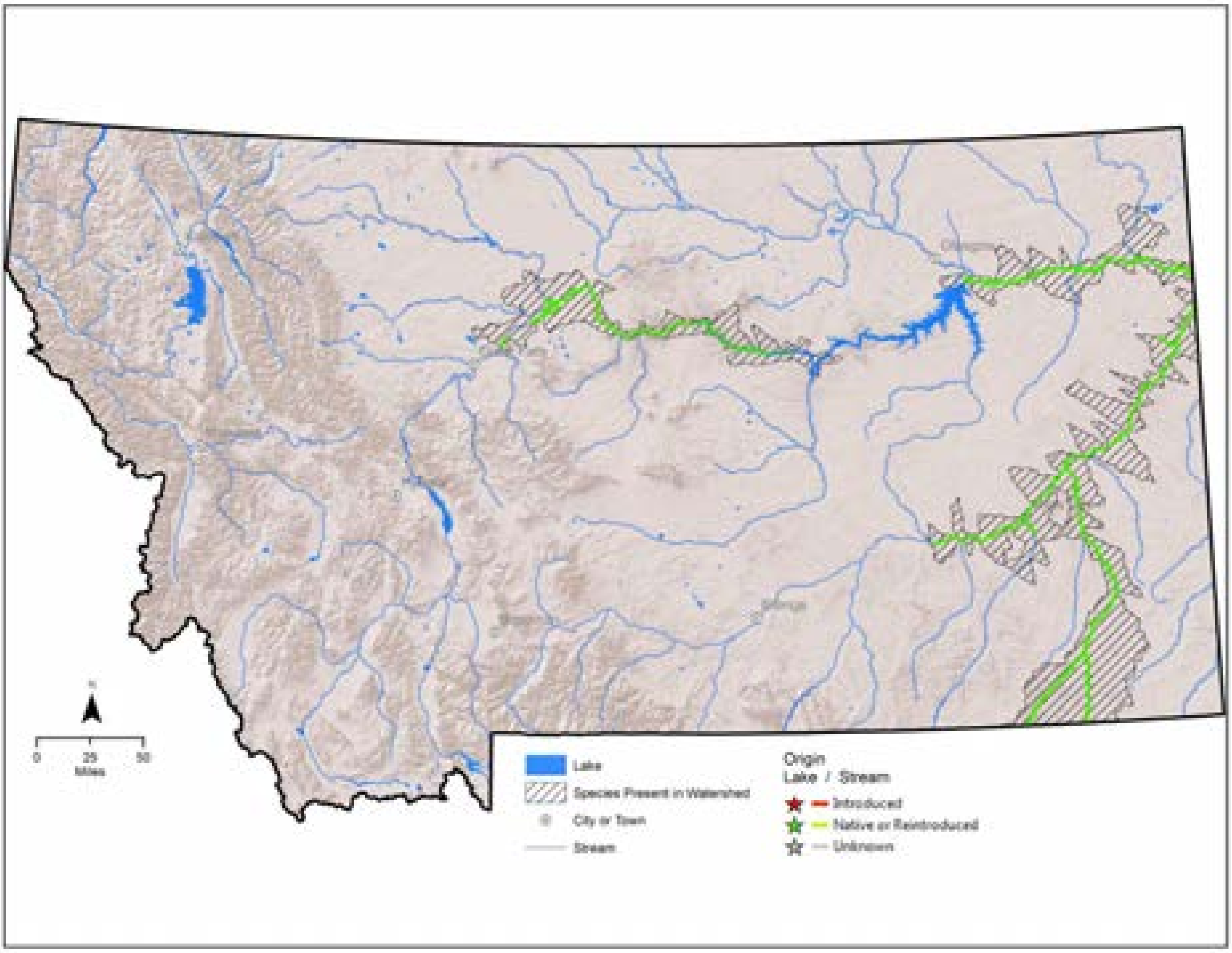

Figure 51. Distribution of sturgeon chub

Habitat

Sturgeon chub are highly adapted to life in turbid waters. Chub are most closely associated with sites having moderate currents and depths and sand or rock substrates (Baxter and Simon 1970; Brown 1976; Lee et al. 1980). In the Powder River, sturgeon chub were taken most frequently at sites with depths less than 20 inches and depth velocities of less than 35.4 inches/second at 23.6 inches in depth (Stewart 1981; Werdon 1992; Gould unpublished data).

Management Plan

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Sturgeon Chub Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Channelization of the Missouri River due to irrigation operations and development	Channelization of the Missouri River due to irrigation operations and development	Work with landowners and other agencies to limit activities that may be detrimental to this species
Decreased range and abundance of prey aquatic insect larvae due to dam construction and snag removal	Decreased range and abundance of prey aquatic insect larvae due to dam construction and snag removal	Increased monitoring and survey efforts in eastern Montana designed to monitor population trends and range expansion or loss and collect additional information on life history and ecology
Habitat alteration by dam operations, reducing turbidities and/or altering temperature and flow regimes	Habitat alteration by dam operations, reducing turbidities and/or altering temperature and flow regimes	Restore more natural flow and temperature conditions in the rivers below mainstream and tributary dams.
Low stream flows probably have eliminated some peripheral sturgeon chub populations in smaller streams	Low stream flows probably have eliminated some peripheral sturgeon chub populations in smaller streams	Restore and enhance streamflows to improve habitat for sturgeon chub
Predation by non-native fish	Predation by non-native fish	Determine the effect of non-native fish on sturgeon chub
Removal of wild individuals used for bait fish	Removal of wild individuals used for bait fish	Educate the public on the identification of and importance of native species

Additional Citations

Baxter, G., and J. Simon. 1970. Wyoming fishers. Bulletin Number 4, Wyoming Game and Fish Department. Cheyenne, Wyoming.

Brown, C. 1976. Fishes of Montana. Big Sky Books, Montana State University. Bozeman, Montana.

Lee, S., et al. 1980. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History. Raleigh, North Carolina.

Stewart, D. 1981. The biology of the sturgeon chub (*Hybopsis gelida girard*) in Wyoming. MS thesis, University of Wyoming, Laramie, Wyoming.

Werdon, S. 1992. Population status and characteristics of *Macrhybopsis gelida*, *Platygobio gracilis* and *Rhinichthyes cataractae* in the Missouri River Basin. MS thesis, South Dakota State University, Brookings, South Dakota.

<u>Trout-perch</u> (*Percopsis omiscomaycus*) State Rank: S2
Species of Greatest Inventory Need Global Rank: G5

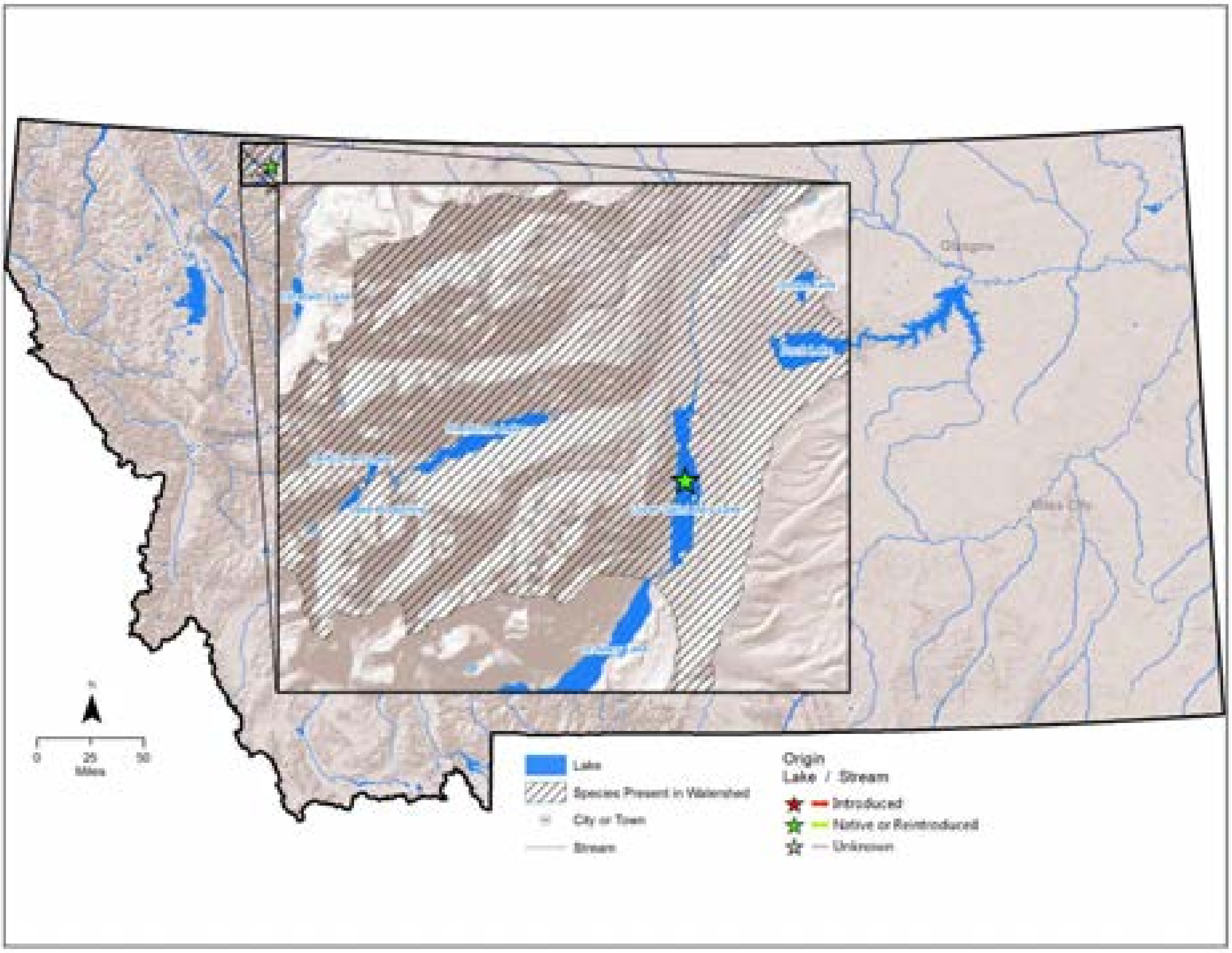

Figure 52. Distribution of the trout-perch

<u>Habitat</u>
Trout-perch preferred habitat is along the shoals of lakes or in deeper pools of streams where the bottom is clean sand, gravel, or rubble. They spawn over sand or gravel in 3-4 feet of water. In the Lower Saint Mary Lake, they are associated with large rocky cover, and are not captured over sandy or silty substrates. During daylight periods, they appear to use rocks as hiding cover, while at night, they are out of, but in close proximity to, rocky cover. In the Saint Mary Canal, trout-perch have been captured in winter after the canal head gate is closed. In the canal, trout-perch are found in residual pools, associated with large, rocky cover or concrete riprap (R. Wagner, USFWS, personal communication, October 2000; AFS website 2013).

<u>Management</u>
FWP classifies trout-perch as a nongame wildlife species. They are too small to be sought by anglers. The entire known range of trout-perch in Montana is within Glacier National Park and the Blackfeet Indian Reservation. Neither entity has a specific management program for trout-perch.

Management Plan

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Trout-perch Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Data poor Lacks baseline survey		Surveys in the Belly River and Waterton Lake in Montana are needed to establish the presence of trout-perch in these waters Target species for survey and inventory
Impoundments restricting proper movement of populations	Impoundments restricting proper movement of populations	Manage irrigation and development to improve connectivity of habitat
Sensitive to pollution and sedimentation associated with row crop agriculture, as well as channelization	Sensitive to pollution and sedimentation associated with row crop agriculture, as well as channelization	Conservation of riparian areas, including increased restrictions on fertilizers and nutrients seeping into waters Work with landowners and land management agencies to limit activities that may be detrimental to this species
Sensitive to warm water temperatures	Sensitive to warm water temperatures	Appropriate conservation action(s) unknown
	Climate change	Continue to evaluate current climate science models and recommended actions Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

American Fisheries Society, Montana Chapter Website. 2013. http://www.fisheriessociety.org/AFSmontana/TroutPerch.html

Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*)*

State Rank: S2
Global Rank: G4T3

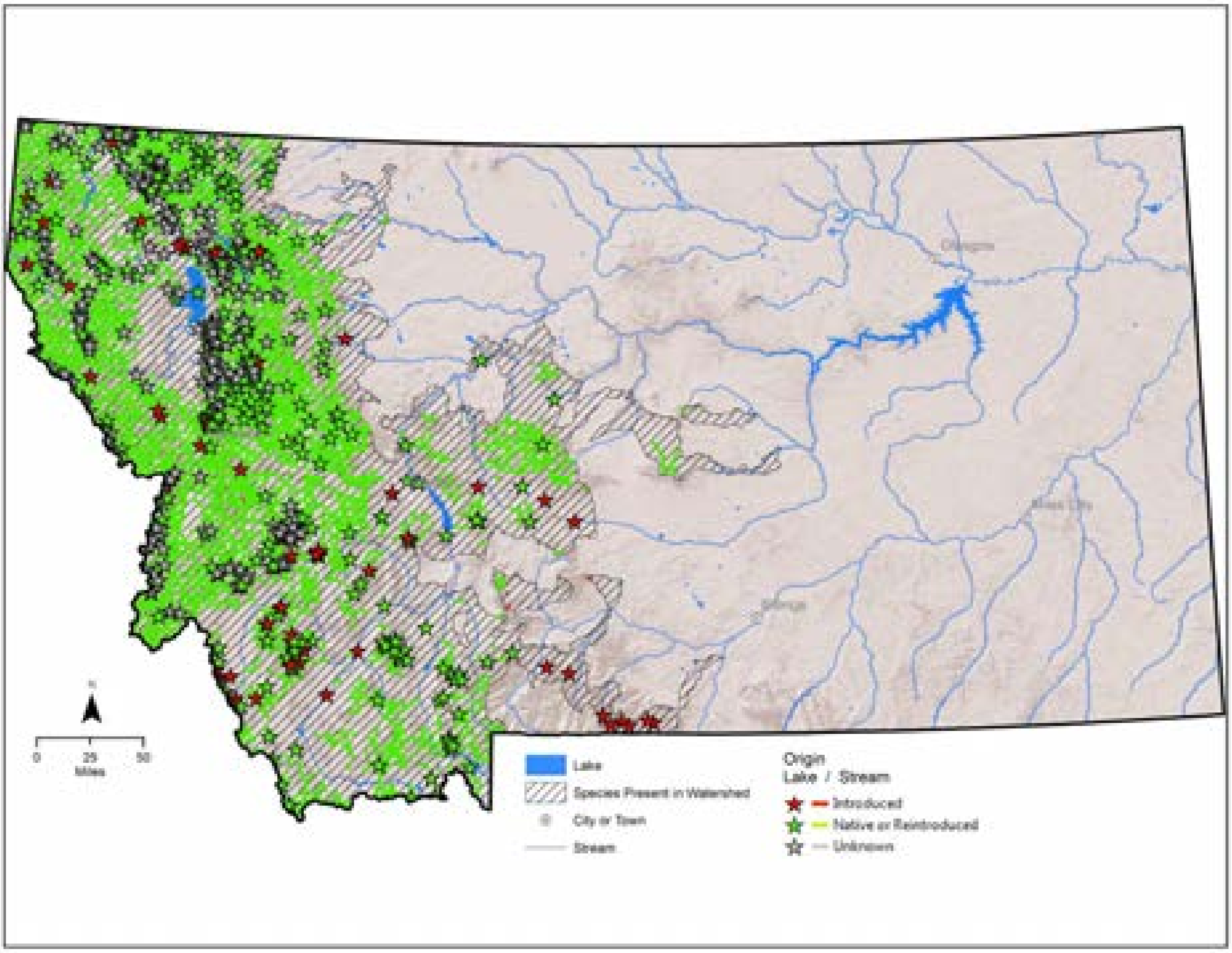

Figure 53. Distribution of westslope cutthroat trout

Habitat

WCT spawning and rearing streams tend to be cold and nutrient poor. This species seeks out gravel substrate in riffles and pool crests for spawning habitat. WCT have long been regarded as sensitive to fine sediment (generally defined as 6.3 millimeters or less). Although studies have documented negative survival as fine sediment increases (Weaver and Fraley 1991), it is difficult to predict their response in the wild (McIntyre and Rieman 1995). This is due to the complexity of stream environments and the ability of fish to adapt somewhat to changes in microhabitat (Everest et al. 1987; AFS website 2013).

WCT require cold water, although it has proven elusive to define exact temperature requirements or tolerances. Likewise, cutthroat trout tend to thrive in streams with more pool habitat and cover than uniform, simple habitat (Shepard et al. 1984). Juvenile WCT overwinter in the interstitial spaces of large stream substrates. Adult WCT need deep, slow-moving pools that do not fill with anchor ice in order to survive the winter (Brown and Mackay 1995; AFS website 2013).

Management

While WCT remain common in many waters west of the continental divide and have been stocked in numerous lakes and reservoirs, their distribution and abundance has declined in many portions of their historic range. Major factors contributing to their decline include competition with non-native species of trout (brook, brown and rainbow trout), hybridization with rainbow trout, stocking outside their historic range, habitat changes, and migratory barriers. In Montana it is currently estimated that genetically pure WCT occupy about 20% (5,950 miles) of their historic range. Slightly hybridized populations (<10% level of hybridization) are also managed for their conservation value and when combined with genetically pure population, the current distribution of WCT increases to 30% (8,830 miles) their historic range.

The status of WCT throughout its distribution in Montana is quite variable. Non-hybridized WCT populations on the west side of the continental divide are more widely distributed and represent the majority of the occupation percentage listed above. Non-hybridized WCT populations in the Upper Missouri River Basin presently only occupy 4% of their historic distribution, and are commonly limited to small headwater streams. As a SGCN and sport fish, WCT receive considerable management attention and resources from FWP, federal land management agencies, and private organizations.

In most cases WCT populations residing in rivers and streams have been identified as "conservation populations," which indicates the need to manage the population for natural, self-sustaining persistence. Streams and rivers are not stocked with hatchery WCT, with the exception being restoration efforts where cutthroat brood or wild eggs are introduced in smaller streams to reestablish populations. Stream and river creel regulations vary based on strength of populations, with "catch and release" or limited harvest with size limits the most common types of regulation.

Management concerns for WCT vary by drainage and region of the state. Efforts to address threats are often developed specific to an individual body of water. In some waters, angler harvest limits and habitat protection are suitable management measures to ensure robust WCT populations remain. In all locations, biologists are actively monitoring and maintaining or improving habitat conditions necessary for robust cutthroat populations. Such efforts may include addressing concerns related to riparian condition, passage concerns at road crossings, entrainment in irrigation systems, and in-stream flow. In some drainages, non-native trout species are removed to reduce threats to "at-risk" populations, or to develop areas for cutthroat restoration. Barriers to upstream fish passage are often constructed at the lower end of these recovery areas to prevent re-invasion of non-native species. Projects to reestablish WCT populations for conservation purposes are common in the upper Missouri and Yellowstone drainages, and these efforts often include transferring eggs or live fish from existing threatened populations to preserve their genetic legacy.

Management of Montana's WCT is directed by regional and statewide management plans. The 2007 document titled *Memorandum and Conservation Agreement for Westslope Cutthroat trout and Yellowstone Cutthroat Trout in Montana* (FWP 2007) is the principal document that sets objectives and goals for overall cutthroat conservation in Montana, and has been signed by numerous state, federal, tribal, and private stakeholders.

Management Plans
Montana Fish, Wildlife & Parks. 2007. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat and Yellowstone Cutthroat Trout in Montana. 37 pp.

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Shepard, Brad B., B. E. May, W. Urie. 2003. Status of westslope cutthroat trout (*Onchorhyncus clarki lewisi*) in the United States, 2002. Westslope Cutthroat Conservation Team.

Westslope Cutthroat Trout Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Habitat restoration Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Restore proper width:depth ratio Routine monitoring of known populations
Competition and predation by non-native species	Competition and predation by non-native species	Increase limits of non-native fish Install barriers when necessary and manipulate fish populations to benefit WCT when possible Removal of non-native fish where appropriate and possible
Fish spawning habitat loss due to dewatering of streams for irrigation and because of barriers created by dams and road culverts	Fish spawning habitat loss due to dewatering of streams for irrigation and because of barriers created by dams and road culverts	Remove barriers and improve fish passage Work with landowners and land management agencies to limit activities that may be detrimental to this species

Current Impacts	Future Threats	Conservation Actions
Habitat loss due to range, forest, mining, or agricultural management practices, residential development, and the impact of roads	Habitat loss due to range, forest, mining, or agricultural management practices, residential development, and the impact of roads	Encourage and support opportunities such as land purchases or conservation easements to conserve upland areas adjacent to occupied waters Ensure that species' requirements are included in forest plans Habitat restoration and enhancement Review sub-division requests and make recommendations based on FWP's *Fish and Wildlife Recommendations for Subdivision Development* (FWP 2012) that reduce the negative effects on SGCN and their habitats Work with landowners and land management agencies to limit activities that may be detrimental to this species
Increased hybridization with other species	Increased hybridization with other species	Assess genetic status of conservation populations Continue to conserve genetically pure populations Creation of barriers to protect remaining populations Protect integrity of pure WCT isolates Restore pure WCT where applicable
Isolated and small population sizes	Isolated and small population sizes	Continue to monitor WCT for trend Continue to monitor WCT populations to adjust stocking when necessary Continue to use the WCT Memorandum of Understanding (Montana Cutthroat Trout Steering Committee 2007) to identify and protect conservation areas

Current Impacts	Future Threats	Conservation Actions
		Identify specific areas where WCT have been extirpated or severely reduced and work toward re-establishment of populations Increase stock populations of genetically pure WCT Reintroduction of WCT
Overfishing	Overfishing	Continue to closely manage WCT harvest Education of WCT identification and distribution

*Only native or reintroduced populations will be addressed.

Additional Citations

American Fisheries Society Montana Chapter website. 2013. http://www.fisheriessociety.org/AFSmontana/Westslope.html

Brown, R. S., and W. C. Mackay. 1995. Fall and Winter Movements of and Habitat Use by Cutthroat Trout in the Ram River, Alberta. Transactions of the American Fisheries Society 124:873–885.

Everest, F. H., R. L. Beschta, J. C. Scrivener, K. V. Koski, J. R. Sedell, and C. J. Cederholm. 1987. Fine Sediment and Salmonid Production: A Paradox. In Streamside Management: Forestry and Fishery Interactions. E. O. Salo and T. W. Cundy, tech. eds. Pp. 98–142. University of Washington, Seattle, Washington.

Leary, R. F., F. W. Allendorf, and N. Kanda. 1998. Lack of Genetic Divergence between Westslope Cutthroat Trout from the Columbia and Missouri River Drainages. Wild Trout and Salmon Genetics Laboratory Report 97/1. Missoula, Montana.

McIntyre, J. D., and B. E. Rieman. 1995. Westslope Cutthroat Trout. Pp. 1–15 in Conservation Assessment for Inland Cutthroat Trout. M. K. Young, tech. ed. General Technical Report RM-256. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Montana Fish, Wildlife & Parks. 2007. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat and Yellowstone Cutthroat Trout in Montana. 37 pp.

Montana Fish, Wildlife & Parks. 2012. Fish and Wildlife Recommendations for Subdivision Development in Montana: A Working Document. Montana Fish, Wildlife & Parks, Helena, Montana. 174 pp.

Shepard, B. B., K. L. Pratt, and P. J. Graham. 1984. Life Histories of Westslope Cutthroat Trout and Bull Trout in the Upper Flathead River Basin, Montana. Montana Department of Fish, Wildlife & Parks, Helena, Montana.

Weaver, T. and J. Fraley. 1991. Fisheries Habitat and Fish Populations. Flathead Basin Forest Practices Water Quality and Fisheries Cooperative Program. Flathead Basin Commission. Kalispell, Montana.

<u>White Sturgeon</u> (Kootenai River Population) (*Acipenser transmontanus*)

State Rank: S1
Global Rank: G4

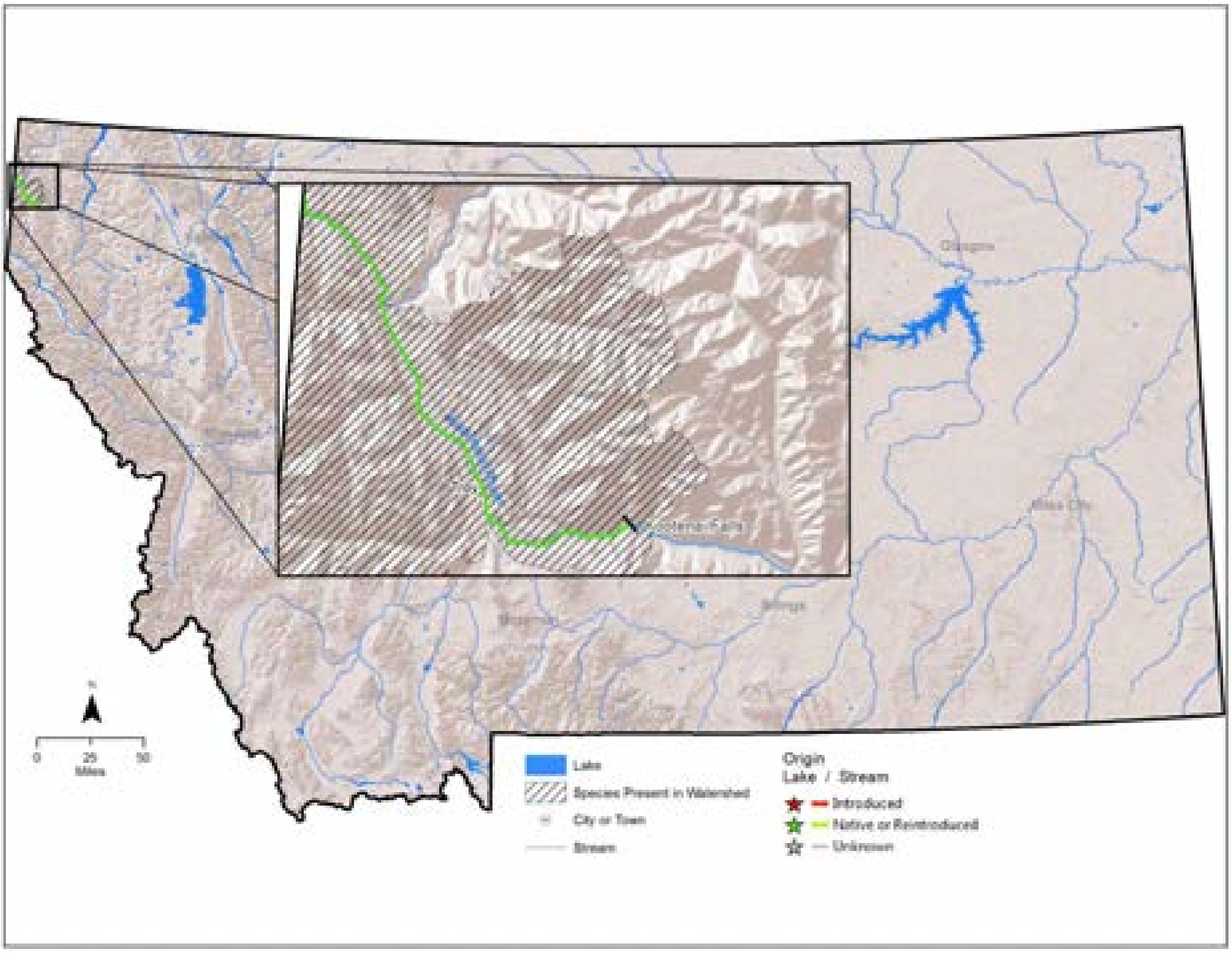

Figure 54. Distribution of white sturgeon

<u>Habitat</u>
The white sturgeon is landlocked in Montana and lives in the large, cool Kootenai River.

<u>Management</u>
Recovery of the white sturgeon population in the Kootenai River is contingent upon reestablishing natural recruitment, minimizing additional loss of genetic variability, and successfully mitigating biological and habitat alterations that continue to harm the population. Refer to the White Sturgeon Recovery Plan (USFWS 1999) for specific details promoting management of white sturgeon. The Kootenai River White Sturgeon Study and Conservation Aquaculture Project was initiated to preserve the genetic variability of the population, begin rebuilding natural age class structure, and prevent extinction while measures are implemented to restore natural recruitment (Anders and Westerhof 1996, USFWS 1999, Ireland 2000, Ireland et al. 2002). A breeding plan has been implemented to guide management in the systematic collection and spawning of wild adults before they are lost from the breeding population (Kincaid 1993). The implementation of the breeding plan includes measures to minimize potential detrimental effects of conventional stocking programs (AFS website 2013).

Management Plan
Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

U.S. Department of the Interior, Fish and Wildlife Service. 1999. White Sturgeon: Kootenai River Population Recovery Plan. Region 1, USFWS, Portland, Oregon.

White Sturgeon Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Recruitment failure: embryo suffocation, predation on early life stages, resource limitations, and possible intermittent female stock limitation	Recruitment failure: embryo suffocation, predation on early life stages, resource limitations, and possible intermittent female stock limitation	Continue the conservation aquaculture program to prevent extinction and preserve genetic variability
Reduced spring flows, unnatural flow fluctuations, and altered thermal regime caused by Libby Dam operation, which may have interrupted spawning behavior and recruitment	Reduced spring flows, unnatural flow fluctuations, and altered thermal regime caused by Libby Dam operation, which may have interrupted spawning behavior and recruitment	Coordinate flow fluctuations in Libby Dam to represent natural flows Restoration of riparian habitats and communities to increase productivity and river function Support restoration efforts of the Kootenai Tribe of Idaho
Limited understanding of species life history in Montana	Limited understanding of species life history in Montana	Continue to enforce an angling ban Continue trend/status monitoring to better understand how this species utilizes portions of the Kootenai River in Montana Participate on and support efforts of the Kootenai River White Sturgeon Recovery Team
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

American Fisheries Society Montana Chapter website. 2013. http://www.fisheriessociety.org/AFSmontana/WhiteSturgeon.html

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Ireland, S. C. 2000. Kootenai River White Sturgeon Studies and Conservation Aquaculture. Annual Progress Report. Prepared for U.S. Department of Energy, Bonneville Power Administration. Contract No. 88 BI 93743, Project No. 88-64. Portland, Oregon.

Ireland, S. C., P. J. Anders, and J. T. Siple. 2002. Conservation aquaculture: An adaptive approach to prevent extinction of an endangered white sturgeon population (*Acipenser transmontanus*). Pages 211-222 In: W. VanWinkle, P. Anders, D. Dixon, and D. Secor, eds. Biology, Management and Protection of North American Sturgeons. American Fisheries Society Symposium 28.

Kincaid, M. L. 1993. A breeding plan to preserve the genetic variability of the Kootenai River white sturgeon. Contract No. DE-AI79-93BP02886. Bonneville Power Administration, Portland, Oregon.

U.S. Department of the Interior, Fish and Wildlife Service. 1999. White Sturgeon: Kootenai River Population Recovery Plan. Region 1, USFWS, Portland, Oregon.

Yellowstone Cutthroat Trout (*Oncorhynchus clarki bouvieri*)*

State Rank: S2
Global Rank: G4T2

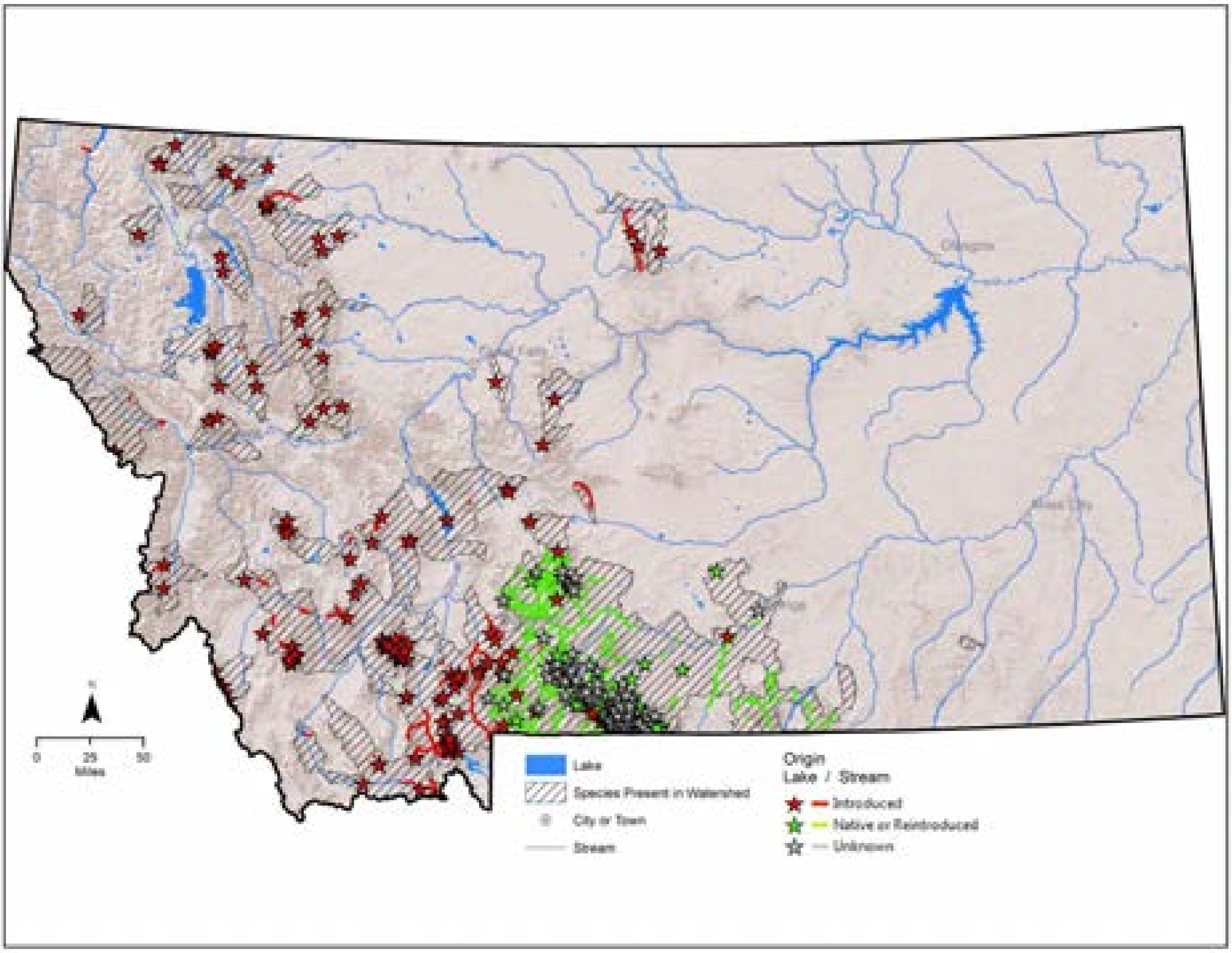

Figure 55. Distribution of Yellowstone cutthroat trout

Habitat

YCT inhabit relatively clear, cold streams, rivers, and lakes. Optimal temperatures have been reported to be from 39 to 59 degrees F., with occupied waters ranging from 32 to 81 degrees F (Gresswell 1995; AFS website 2013).

Management

While YCT remain common in many waters west of the continental divide and have been stocked in numerous lakes and reservoirs, their distribution and abundance has declined in many portions of their historic range. Major factors contributing to the sub-species' decline include competition with non-native species of trout (brook, brown and rainbow trout), hybridization with rainbow trout, stocking outside their historic range, habitat changes and migratory barriers. In Montana it is currently estimated that genetically pure YCT occupy about 16% (705 miles) of their historic range. Slightly hybridized populations (<10% level of hybridization) are also managed for their conservation value and when combined with genetically pure population, the current distribution of YCT increases to and 28% (1,210 miles) of their historic ranges.

YCT status and distribution varies spatially. Some areas exist where YCT have been isolated from non-native fishes, but many of the existing YCT populations overlap with non-native species and are therefore not secure. Non-hybridized YCT populations in the Upper Yellowstone River Basin presently occupy 26% of their historic distribution. As a SGCN and sport fish, YCT receive considerable management attention and resources from FWP, federal land management agencies, and private organizations.

In most cases YCT populations residing in rivers and streams have been identified as "conservation populations," which indicates the need to manage the population for natural, self-sustaining persistence. Streams and rivers are not stocked with hatchery YCT, with the exception being restoration efforts where cutthroat brood or wild eggs are introduced in smaller streams to reestablish populations. Stream and river creel regulations vary based on strength of populations, with "catch and release" or limited harvest with size limits the most common types of regulation.

Management concerns for YCT vary by drainage and region of the state. Efforts to address threats are often developed specific to an individual body of water. In some waters, angler harvest limits and habitat protection are suitable management measures to ensure robust YCT populations remain. In all locations, biologists are actively monitoring and maintaining or improving habitat conditions necessary for robust cutthroat populations. Such efforts may include addressing concerns related to riparian condition, passage concerns at road crossings, entrainment in irrigation systems, and in-stream flow. In some drainages, non-native trout species are removed to reduce threats to "at-risk" populations, or to develop areas for cutthroat restoration. Barriers to upstream fish passage are often constructed at the lower end of these recovery areas to prevent re-invasion of non-native species. Projects to reestablish YCT populations for conservation purposes are common in the upper Missouri and Yellowstone drainages, and these efforts often include transferring eggs or live fish from existing threatened populations to preserve their genetic legacy.

Management of YCT is directed by regional and statewide management plans. The 2007 document titled *Memorandum and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana* (FWP 2007) is the principal document that sets objectives and goals for overall cutthroat conservation in Montana, and has been signed by numerous state, federal, tribal, and private stakeholders.

Management Plans

Endicott, C., S. Opitz, B. Shepard, P. Byorth, S. Shuler, S. Barndt, B. Roberts, and L. Roulson. 2012. Yellowstone cutthroat trout conservation strategy for the Shields River watershed above Chadbourne Diversion. 141 pp. http://fwp.mt.gov/fishAndWildlife/management/yellowstoneCT/

Montana Department of Fish, Wildlife & Parks. 2000. Cooperative Conservation Agreement for Yellowstone Cutthroat Trout within Montana between Crow Tribe, Montana Department of Fish, Wildlife & Parks, Montana Department of Environmental Quality, Montana Department of Natural Resources and Conservation, USDA Forest Service–Northern Region, Gallatin and Custer national forests, Bureau of Land Management–Montana, US Fish and Wildlife Service, Bureau of Indian Affairs, Yellowstone National Park.

Montana Fish, Wildlife & Parks. 2007. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat and Yellowstone Cutthroat Trout in Montana. 37 pp.

Montana Fish, Wildlife & Parks. 2013. Montana Statewide Fisheries Management Plan, 2013-2018. Montana Fish, Wildlife & Parks, Helena, Montana. 478 pp.

Montana Fish, Wildlife and Parks. 2013. Yellowstone Cutthroat Trout Conservation Strategy for Montana. http://fwp.mt.gov/fishAndWildlife/management/yellowstoneCT/

Range-Wide Yellowstone Cutthroat Trout Conservation Team. 2009. Conservation Strategy for Yellowstone Cutthroat Trout (*Oncorhynchus clarkii bouvieri*) in the States of Idaho, Montana, Nevada, Utah and Wyoming. Montana Fish, Wildlife and Parks, Helena.

Yellowstone Cutthroat Trout Working Group. 1994. Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) management guide for the Yellowstone River drainage. Montana Department of Fish, Wildlife & Parks, Helena, Montana, and Wyoming Game and Fish Department, Cheyenne, Wyoming.

Yellowstone Cutthroat Trout Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Habitat restoration Maintain connectivity Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations
Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat	Culverts, dams, irrigation diversions, and other instream barriers that fully or partially impede fish movement and reduce connectivity of habitat	Removal or modification of barriers to restore beneficial fish passage
Habitat degradation	Habitat degradation	Habitat restoration and enhancement

Current Impacts	**Future Threats**	**Conservation Actions**
Persistence of non-native fish	Persistence of non-native fish	Continue harvest management of non-native trout Reduce or eliminate stocking of non-native fish
Poor range, forest, development, or mining management practices	Poor range, forest, development, or mining management practices	Encourage and support opportunities such as land purchases or conservation easements to conserve upland areas adjacent to occupied waters Ensure that species' requirements are included in forest plans Habitat restoration and enhancement Review sub-division requests and make recommendations based on FWP's *Fish and Wildlife Recommendations for Subdivision Development* (FWP 2012) that reduce the negative effects on SGCN and their habitats Work with landowners and land management agencies to limit activities that may be detrimental to this species
River channelization or riprap	River channelization or riprap	Work with new stabilization projects to reduce impacts and support efforts to restore existing rip-rap areas to natural condition
Susceptibility to infection by *Myxobolus cerebralis*, a European protozoan and the causative agent of whirling disease	Susceptibility to infection by *Myxobolus cerebralis*, a European protozoan and the causative agent of whirling disease	Work with partners to provide or obtain funding to study whirling disease
Tributary dewatering by unsustainable irrigation practices	Tributary dewatering by unsustainable irrigation practices	Work with landowners and land management agencies to limit activities that may be detrimental to this species

Current Impacts	Future Threats	Conservation Actions
Widespread stocking of non-indigenous populations of YCT	Widespread stocking of non-indigenous populations of YCT	Decrease stocking of non-indigenous YCT to decrease genetic homogenization Decrease stocking of non-native trout Follow recommendations in the Yellowstone Cutthroat Trout Conservation Strategy for Montana (FWP 2013), specifically for monitoring for genetic diversity and population change (page 183,184)

*Only native or reintroduced populations will be addressed.

Additional Citations

American Fisheries Society Montana Chapter website. 2013. http://www.fisheriessociety.org/AFSmontana/Yellowstone.html

Gresswell, R. E. 1995. Yellowstone cutthroat trout. Pp. 36–54 in M. K. Young, tech. ed. Conservation assessment for inland cutthroat trout. USDA Forest Service General Technical Report RM-GTR-256.

Montana Fish, Wildlife & Parks. 2007. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat and Yellowstone Cutthroat Trout in Montana. 37 pp.

Montana Fish, Wildlife & Parks. 2012. Fish and Wildlife Recommendations for Subdivision Development in Montana: A Working Document. Montana Fish, Wildlife & Parks, Helena, Montana. 174 pp.

Montana Fish, Wildlife and Parks. 2013. Yellowstone Cutthroat Trout Conservation Strategy for Montana. http://fwp.mt.gov/fishAndWildlife/management/yellowstoneCT/

Mammals

Arctic Shrew (*Sorex arcticus*) State Rank: S1S3
Global Rank: G5

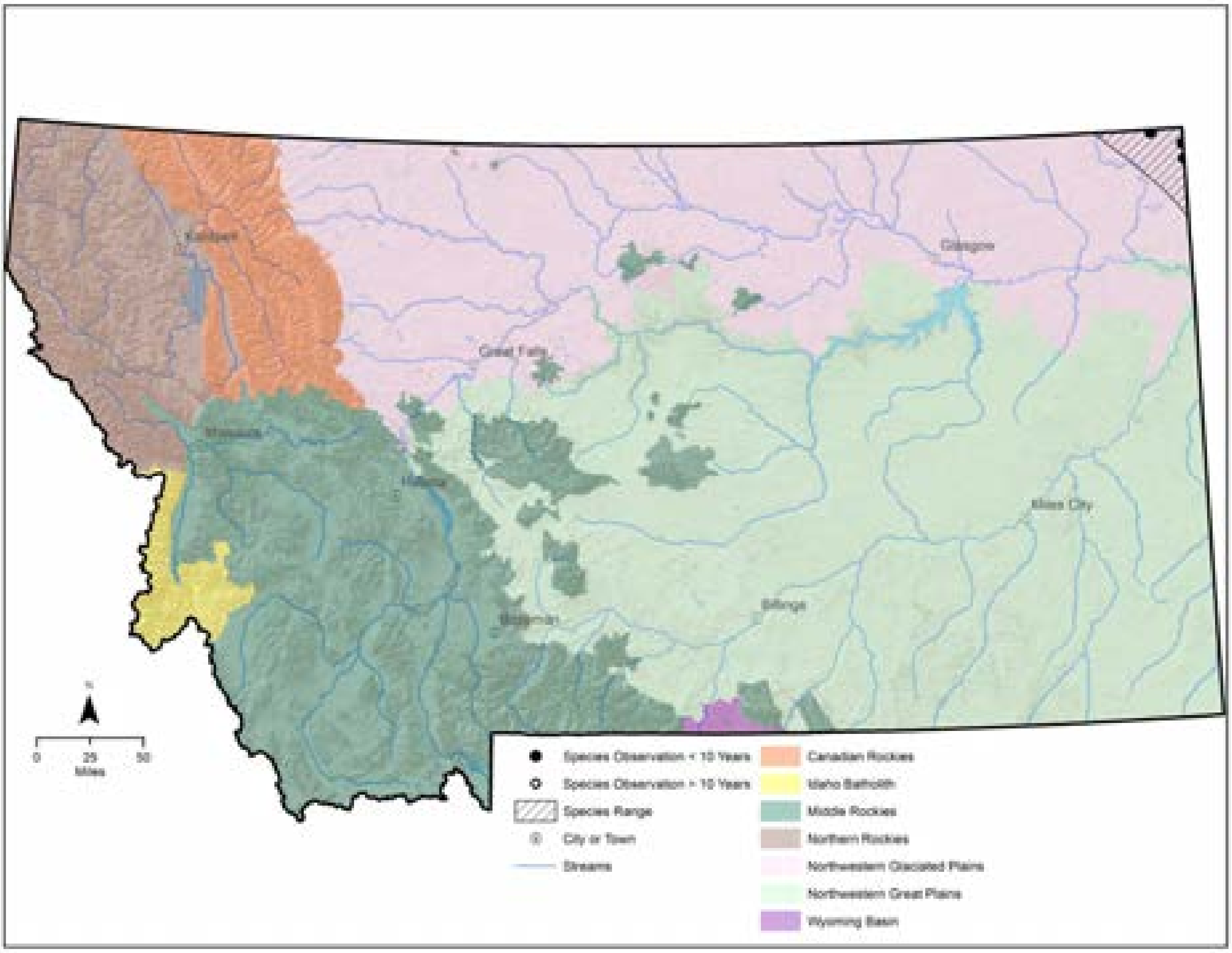

Figure 56. Montana range and observations of the arctic shrew

Habitat

Little is known about habitat requirements of the arctic shrew in Montana. All individuals captured were in wet meadows adjacent to marshes or in the sandy flats of creek floodplains (Foresman 2012).

Management

No management needs have been identified nor have any measures been enacted for the conservation of arctic shrew in Montana. Nevertheless, wetland drainage or alteration has the potential to negatively impact local populations. Additional surveys for arctic shrew can provide the basis for development of conservation protocols by determining its full distribution in Montana, the array of habitats in which it occurs, its relative abundance in different habitats, and, if properly designed, an idea of how different habitat disturbances affect this shrew at the margin of its global range.

Management Plan
None.

Arctic Shrew Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Data poor		Target species for survey and inventory
Conversion of native habitat to cropland agriculture	Conversion of native habitat to cropland agriculture	Protect habitat that is at highest risk of conversion to cropland through the possible use of easements acquisition Work with landowners and land management agencies to limit activities that may be detrimental to this species
Oil and gas development	Oil and gas development	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (FWP In prep)
Wetland degradation or loss	Wetland degradation or loss	Work with landowners and land management agencies to limit activities that may be detrimental to this species

Additional Citations
Foresman, K. R. 2012. Mammals of Montana. Mountain Press Publishing Company. Missoula, Montana.

Montana Fish, Wildlife & Parks. In Prep. Fish and Wildlife Recommendations for Oil and Gas Development in Montana.

Bison (*Bos bison*) State Rank: S2
Global Rank: G4

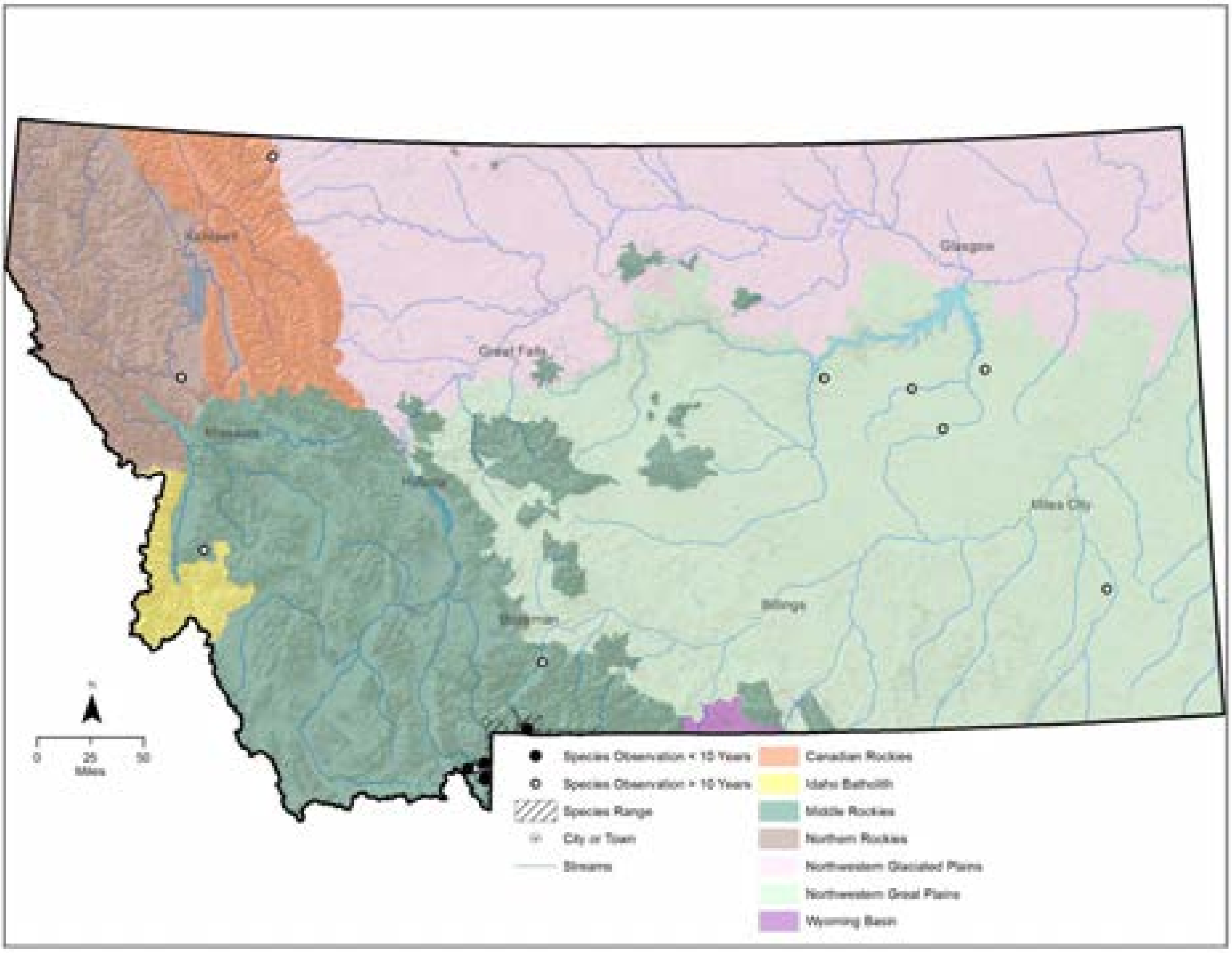

Figure 57. Montana range and observations of bison

Habitat

Because of restrictions, currently occupied habitat does not reflect the full natural range for bison. Throughout their range, bison inhabit woodlands and open plains and grasslands. Woodlands and openings in boreal forests, meadows, and river valleys are used in the northern parts of their range. Like other large grazers, they are attracted to burn areas the next growing season (Shaw and Carter 1990). During the growing season at the Konza Prairie in northeastern Kansas, they preferred areas that had been burned in spring. Summer grazing was concentrated in a large watershed area (195 to 295 acres) dominated by warm-season, perennial C4 grasses. In fall and winter they grazed both burned and unburned watersheds more uniformly, but grazed most intensively in areas with large stands of cool-season, C3 grasses (Vinton et al. 1993).

Management

Bison are classified as "domestic livestock" or a "game animal" depending on whether they are found in the wild or in privately held herds (Adams and Dood 2011). Their classification also dictates which state agency has management authority, Department of Livestock or FWP.

Management of free-ranging bison in Montana has been controversial. The presence of brucellosis in these animals and their migration out of YNP into adjacent public and private lands has led to conflicts between private landowners, citizens, public administrative agencies, and public land management agencies. Free-ranging herds in Montana are currently managed under the Interagency Bison Management Plan (National Park Service 2000).

The current distribution of the only wild herd of bison in Montana is the YNP herd. Management potential of this herd is limited to several very small areas outside of YNP where they are tolerated. This bison herd is designated as "species in need of disease control" under the Interagency Bison Management Plan (National Park Service 2000). Hunting is allowed on this herd when individuals leave the park and enter Montana.

The current YNP bison controversy needs to be addressed in a manner to reduce conflict while providing adequate habitat and management for long term persistence of this herd.

<u>Management Plan</u>

Montana Department of Livestock and Montana Fish, Wildlife & Parks. 2000. Interagency bison management plan. 70 pp.

National Park Service. 2000. Bison Management for the State of Montana and Yellowstone National Park. Final Environmental Impact Statement for the Interagency Bison Management Plan for the State of Montana and Yellowstone National Park. Vol. I. August 2000.

Bison Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Bison genome has been eroded by unnatural management practices and introgression with domestic cattle genes	Bison genome has been eroded by unnatural management practices and introgression with domestic cattle genes	Preserve wild bison genome through herd expansion and restoration of bison as wildlife in North America
Disease (brucellosis)	Disease risk in YNP	Follow FWP's brucellosis plan and protocols Continue development of working relationships with landowners and other constituents

Current Impacts	Future Threats	Conservation Actions
Existing genetically intact herds are not free ranging with the exception of the YNP herd which technically is limited in range outside of Park borders	Existing genetically intact herds are not free ranging with the exception of the YNP herd which technically is limited in range outside of Park borders	Establish disease-free bison populations as wildlife in suitable grassland habitats outside YNP where they can function ecologically and operate as keystone species to restore grassland systems Create populations of wild bison that can be harvested and provide economic and social benefits to MT Work with landowners, other agencies, and non-governmental organizations to encourage bison tolerance outside of YNP

Additional Citations

Adams, S.M. and A.R. Dood. 2011 Background Information on Issues of Concern for Montana: Plains Bison Ecology, Management, and Conservation. Montana Fish Wildlife & Parks, Bozeman, Montana.

National Park Service. 2000. Bison Management for the State of Montana and Yellowstone National Park. Final Environmental Impact Statement for the Interagency Bison Management Plan for the State of Montana and Yellowstone National Park. Vol. I. August 2000.

Shaw, J. A., and T. S. Carter. 1990. Bison movements in relation to fire and seasonality. Wildlife Society Bulletin 18:426–430.

Vinton, M. A., D. C. Hartnett, E. J. Finck, and J. M. Briggs. 1993. Interactive effects of fire, bison (*Bison bison*) grazing and plant community composition in tallgrass prairie. American Midland Naturalist 129:10–18.

Black-footed Ferret (*Mustela nigripes*) State Rank: S1
Global Rank: G1

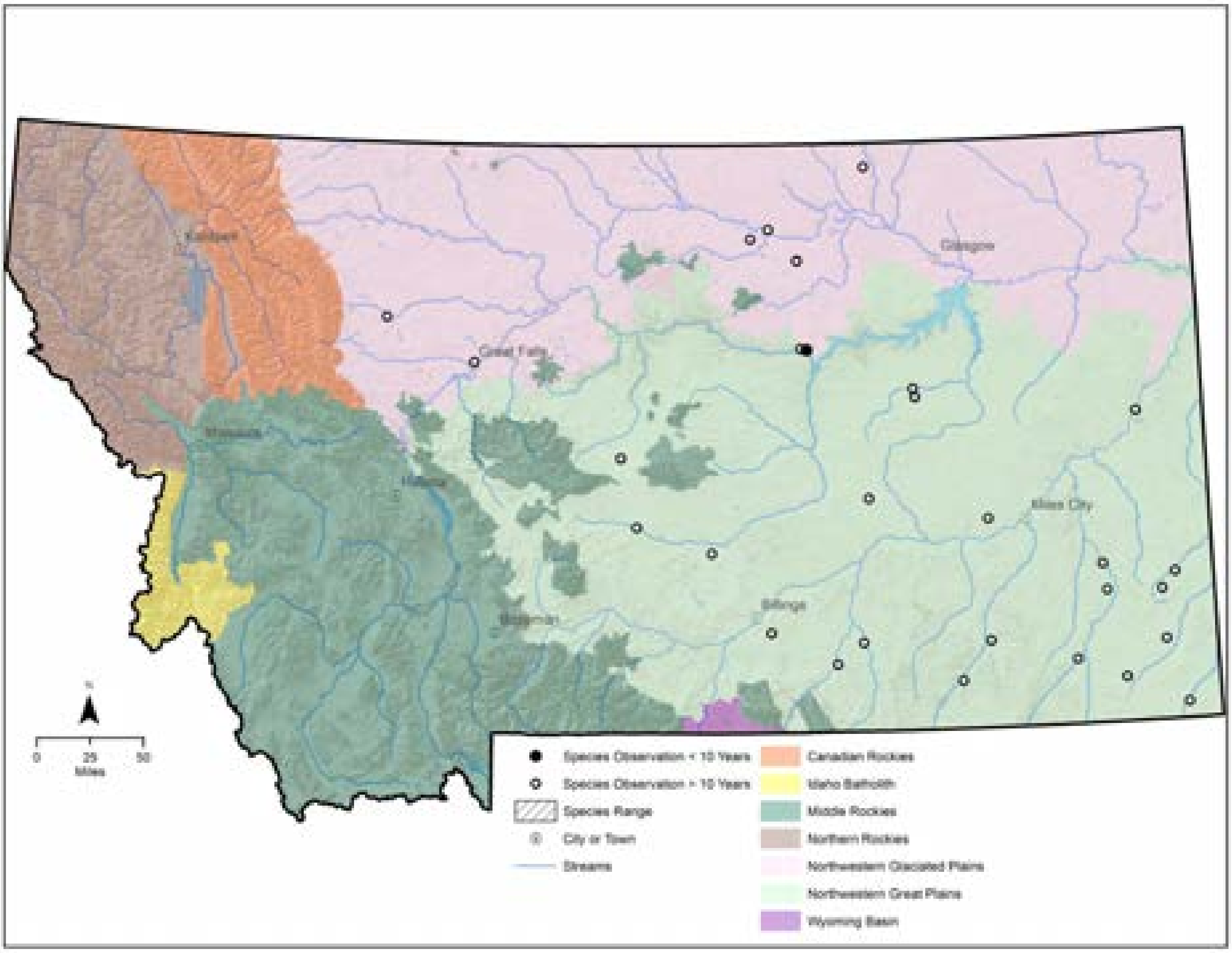

Figure 58. Montana observations of the black-footed ferret

Habitat
Black-footed ferrets are intimately tied to prairie dogs (*Cynomys* spp.) throughout their range and have only been found in association with prairie dogs. They are therefore limited to the same open habitat used by prairie dogs: grasslands, steppe, and shrub-steppe. Black-footed ferrets do not dig their own burrows and rely on abandoned prairie dog burrows for shelter. Only large complexes (several thousand acres of closely spaced colonies) can support and sustain a breeding population of black-footed ferrets. It has been estimated that about 100 to 150 acres of prairie dog colony is needed to support one ferret, and females with litters have never been found on colonies smaller than 120 acres (Miller et al. 1996). Ferrets scent-mark to maintain spatial separation (Richardson 1986).

Management
Black-footed ferrets have been extirpated from most of their former large range largely as a result of loss of habitat due to prairie dog control programs and have been listed as endangered since 1967. Canine distemper, in conjunction with captures for captive breeding, resulted in extirpation of the last known wild population near Meeteetse, Wyoming, by early 1987. See

Miller et al. (1996) for more information on the discovery of the Meeteetse ferrets and subsequent distemper-caused decline and captive breeding decisions that occurred in 1985. Currently the only known surviving populations are the result of captive-bred ferret reintroductions. Reintroductions have occurred in Montana on federal and tribal land since 1994 with varying success. Predation by coyotes and badgers and the loss of prairie dogs to sylvatic plague appear to be the primary failures of reintroduction efforts. Some wild reproduction has occurred, but no self-sustaining populations have been established in Montana.

In Montana, the goal is to reestablish 2 viable populations with a minimum of 50 breeding adults in each (FWP 2013). Nationwide, the objective is to increase the captive population to 250 breeding adults and to establish a wild pre-breeding population of 1,500 adults in 10 or more locations by 2020 (Black-footed Ferret Recovery Implementation Team 2013). A Programmatic Safe Harbor Agreement with 12 states was completed in October 2013. This is an important step to recover this species.

Management Plans

Anderson, M. E. et al. 1978. Black-footed ferret recovery plan. U.S. Fish and Wildlife Service Black-footed Ferret Recovery Team. 150 pp.

Bureau of Land Management. 1979. Habitat management plan prairie dog ecotypes. BLM, Montana State Office. Wildlife Habitat Area MT-02-06-07-S1. 61 pp.

Christopherson, D., R. Stoneberg, R. Matchett, D. Biggins, J. Grensten, A. Dood, B. Haglan. 1994. Black-footed ferret reintroduction in Montana: project description and 1994 protocol. 31 pp plus appendix.

Montana Fish, Wildlife & Parks. 1992. North-central Montana black-footed ferret reintroduction and management plan. Prepared by North Central Montana Working Group. 59 pp.

U.S. Fish and Wildlife Service. 1988. Black-footed ferret recovery plan. Denver, Colorado. 154 pp.

U.S. Fish and Wildlife Service. 1994. Endangered and threatened wildlife and plants: establishment of a nonessential experimental population of black-footed ferrets in north-central Montana; final rule. Federal Register 59:42696-42715.

U.S. Fish and Wildlife Service. 2013. DRAFT Recovery plan for the black-footed ferret (*Mustela nigripes*). Denver, Colorado. 130 pp.

Black-footed Ferret Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Disease, such as canine distemper	Disease, such as canine distemper	Continue monitoring diseases that impacts the health of populations
Failed success of reintroduction efforts	Failed success of reintroduction efforts	Continue supporting future reintroduction efforts based on the adaptive management paradigm
Lack of prey base due to declining prairie dog colonies	Lack of prey base due to declining prairie dog colonies	Use plague vaccine, if proven effective, on prairie dog towns that ferrets use or may be translocated to Work through cooperative agreements with private landowners and land management agencies to manage for healthy populations of prairie dogs
Reduction of habitat	Reduction of habitat	Conduct research to validate critical habitat needs of black-footed ferrets Continue to develop, refine, and implement financial incentives for landowners to maintain prairie dogs Support strategic conservation easements by conservation organizations and public agencies to enhance important habitat Work to develop information campaign to inform landowners and public concerning the need to maintain healthy habitats for black-footed ferrets
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Additional Citations

Black-footed Ferret Recovery Implementation Team. 2013. http://www.blackfootedferret.org/recovery-plan-goals

Miller, B., R. P. Reading, and S. Forrest. 1996. Prairie Night. Smithsonian Institute Press. Washington DC. 320 pp.

Montana Fish, Wildlife & Parks. 2013. Black-footed ferret species of interest page. http://fwp.mt.gov/fishAndWildlife/species/endangered/ferret/default.html

Richardson, L. 1986. On the track of the last black-footed ferrets. Nat. Hist. 95(2):69–77.

Dwarf Shrew (*Sorex nanus*)

State Rank: S2S3
Global Rank: G4

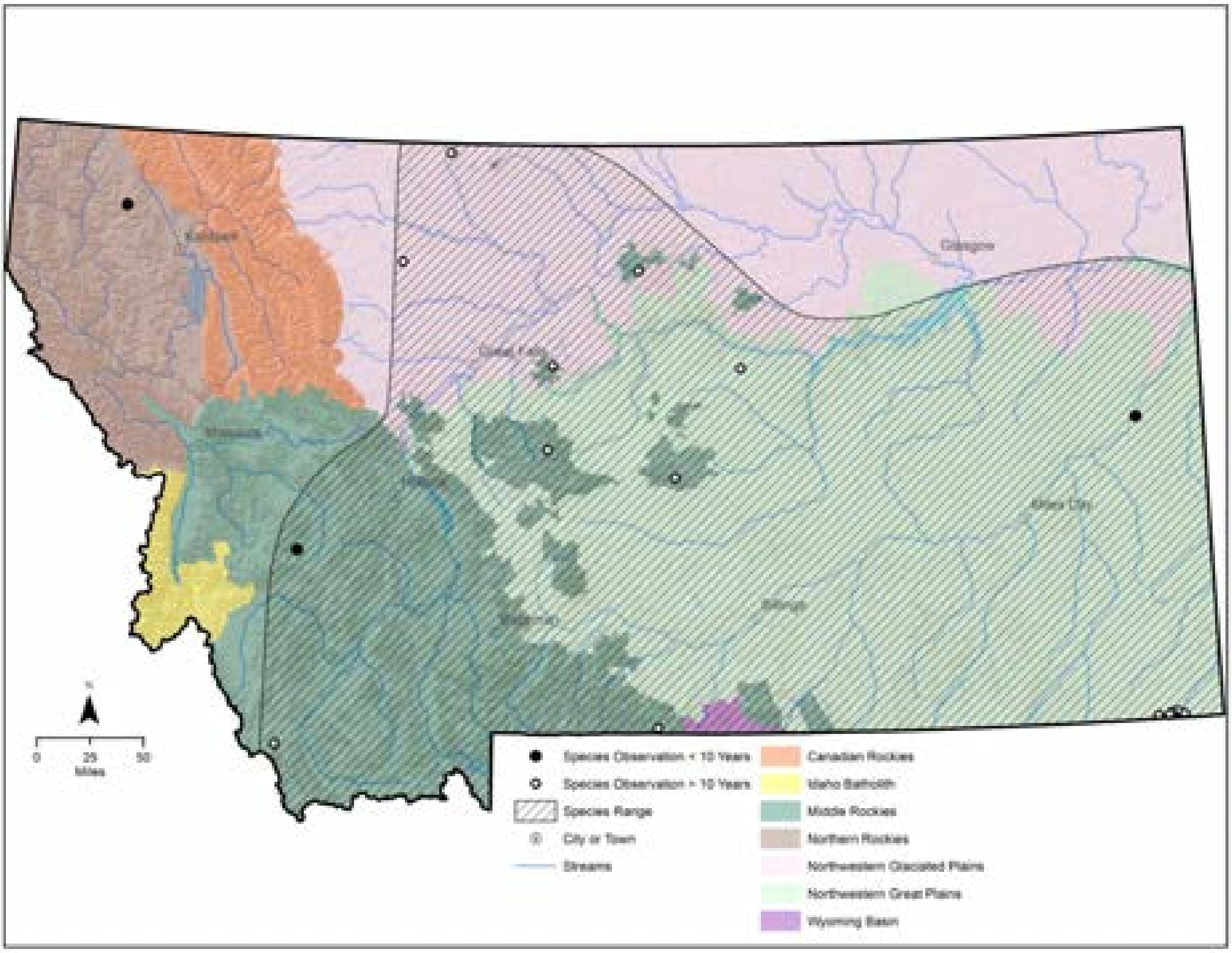

Figure 59. Montana range and observations of the dwarf shrew

Habitat

In general, the dwarf shrew is found in a variety of habitats, including rocky areas and meadows in alpine tundra and subalpine coniferous forest (spruce-fir), rocky slopes and meadows in lower-elevation forest (e.g., ponderosa pine, aspen, Douglas-fir) with a mixed shrub component, sedge marsh, subalpine meadow, arid sagebrush slopes, arid shortgrass prairie, dry stubble fields, and pinyon-juniper woodland (Hoffmann and Owen 1980, Berna 1990, Kirkland et al. 1997, Rickart and Heaney 2001, Hafner and Stahlecker 2002).

Habitats where dwarf shrews have been documented in Montana are similar in variety to those occupied elsewhere in the global range. Many have been taken in rocky locations in alpine terrain and subalpine talus (0.75 to 4 inches diameter) bordered by spruce-fir, lodgepole pine, or Douglas-fir and aspen; lesser numbers have been captured in montane grassland, sagebrush-grassland with 22% bare ground, and prairie riparian habitat dominated by green ash, rose, and timothy (Hoffmann and Taber 1960, Pattie and Verbeek 1967, Hoffmann et al. 1969, Thompson 1977, MacCracken 1985). Dwarf shrews appear to be adapted to many different habitat conditions (Foresman 2012).

Management
No management measures have been enacted for dwarf shrew in Montana. However, alteration or removal of grassland and sagebrush through fire, herbicides, or mechanical methods, may impact local lower-elevation populations. Measures taken to protect a diversity of size and cover classes of grassland and sagebrush will likely contribute to the conservation of dwarf shrew. Reclamation/restoration of native prairie appears to provide some measure of effective mitigation for strip-mining activity in prairie regions (Kirkland et al. 1997), but this needs additional study. Surveys for dwarf shrew can provide the basis for development of conservation protocols by determining its full distribution in Montana, the array of habitats in which it occurs, its relative abundance in different habitats, and, if properly designed, an idea of how different habitat disturbances affect this rare shrew.

Management Plan
None.

Dwarf Shrew Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Data poor		Target species for survey and inventory

Additional Citations
Berna, H. J. 1990. Observations on the dwarf shrew (*Sorex nanus*) in northern Arizona. Great Basin Nat. 50: 161-165.

Foresman, K. R. 2012. Mammals of Montana. Mountain Press Publishing Company. Missoula, Montana.

Hafner, D. J., and D. W. Stahlecker. 2002. Distribution of Merriam's Shrew (*Sorex merriami*) and the Dwarf Shrew (*Sorex nanus*), and new records for New Mexico. Southwestern Naturalist 47:134-137.

Hoffmann, R. S. and J. G. Owen. 1980. *Sorex tenellus* and *Sorex nanus*. Mamm. Species 131:1-4.

Hoffmann, R. S. and R. D. Taber. 1960. Notes on Sorex in the northern Rocky Mountain alpine zone. J. Mammal. 41(2): 230-234.

Hoffmann, R. S., P. L. Wright, and F. E. Newby. 1969. Distribution of some mammals in Montana. I. Mammals other than bats. J. Mammal. 50(3): 579-604.

Kirkland, G. L., Jr., R. R. Parmenter, and R. E. Skoog. 1997. A five-species assemblage of shrews from the sagebrush-steppe of Wyoming. Journal of Mammalogy 78:83-89.

MacCracken, J. G., D. W. Uresk, and R. M. Hansen. 1985. Habitat used by shrews in southeastern Montana. Northwest Science 59(1):24-27.

Pattie, D. L. and N. A. M. Verbeek. 1967. Alpine mammals of the Beartooth Plateau. Northwest Sci. 41(3): 110-117.

Rickart, E. A., and L. R. Heaney. 2001. Shrews of the La Sal Mountains, southeastern Utah. Western North American Naturalist 61:103-108.

Thompson, L.S. 1977. Dwarf shrew in north-central Montana. J. Mammal. 58:248-250.

Grizzly Bear (*Ursus arctos*) State Rank: S2S3
Global Rank: G4

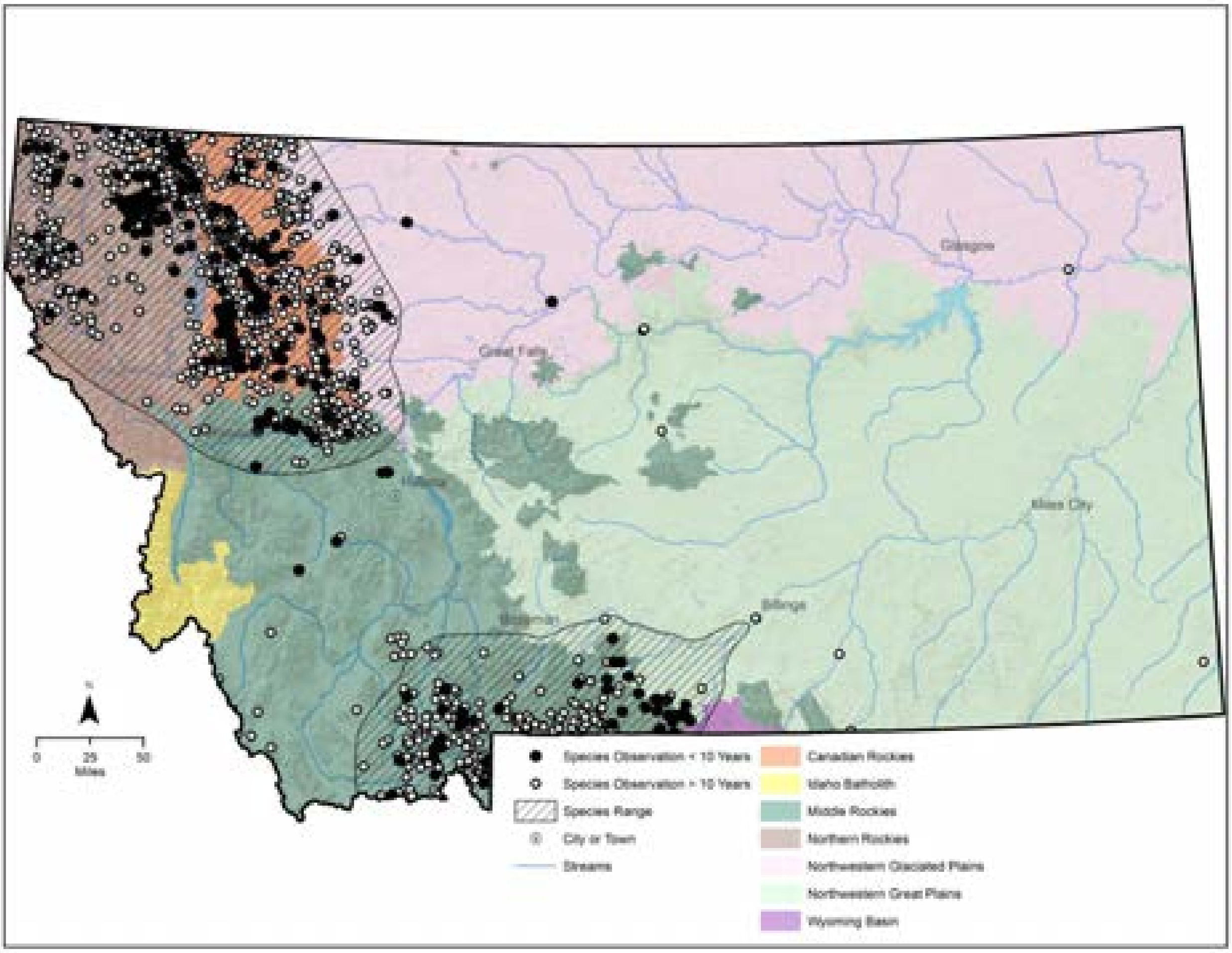

Figure 60. Montana range and observations of the grizzly bear

Habitat

In Montana, grizzlies primarily use meadows, seeps, riparian zones, mixed shrub fields, closed timber, open timber, side-hill parks, snow chutes, and alpine slabrock habitats. Habitat use is highly variable between areas, seasons, local populations, and individuals (Servheen 1983; Craighead et al. 1982; Aune et al. 1984). Historically, the grizzly also was present on the plains occurring throughout most of eastern Montana.

Management

On July 28th, 1975, the grizzly bear was designated as threatened in lower 48 states under the ESA. Currently populations in the Cabinet/Yaak, Northern Continental Divide and Greater Yellowstone recovery areas are listed as threatened. The Bitterroot Recovery Zone in the Bitterroot Mountains of Montana and Idaho was designated in anticipation of reintroduction of grizzly bears where they would be classified as experimental nonessential. This reintroduction never took place, but in 2007 a naturally colonizing grizzly bear was killed in the Idaho portion of this recovery area.

In 2007, USFWS announced that the Yellowstone Distinct Population Segment of grizzly bears was a recovered population no longer meeting the ESA's definition of threatened (Federal Register 2007). In 2009 the Yellowstone Distinct Population Segment was relisted as threatened as a result of a U.S. District ruling that stated declines in whitebark pine and inadequate conservation plans still threaten the species. This ruling has been upheld by the U.S. 9th Circuit Court of Appeals. USFWS completed a 5-year review of the status of grizzly bears in August of 2011. There are numerous policies, e.g., MCA 12.9.103 that outline guidelines for FWP to promote the conservation and responsive management grizzly bears in Montana. Regional specific management plans include the Grizzly Bear Management Plan for Southwestern Montana (FWP 2002; 2013 plan underway) and the Grizzly Bear Management Plan for Western Montana (Dood et al. 2006), along with various tribal, National Forest, and National Park plans and policies. Most of these management plans are centered on 3 major themes: management of habitat to ensure grizzly bears have large expanses of suitable interconnected lands in which to exist, management of grizzly bear/human interactions that can result in death of the bears involved, and monitoring to determine population size and trends. Consult the management plans listed below for specifics on grizzly bear management.

<ins>Management Plans</ins>

Dood, A. R., S. J. Atkinson, and V. J. Boccadori. 2006. Grizzly Bear Management Plan for Western Montana: final programmatic environmental impact statement 2006-2016. Montana Department of Fish, Wildlife and Parks, Helena, Montana. 163 pp.

Interagency Conservation Strategy Team. 2007. Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area. 86 pp.

Interagency Conservation Strategy Team. *In prep*. Final Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem.

Montana Fish, Wildlife & Parks. 2001. Conservation Plan for Grizzly Bears in Montana. Pursuant to Section 6(C)(1) of the Endangered Species Act and Montana Fish, Wildlife & Parks Endangered Wildlife Program E-6. Helena, Montana.

Montana Fish, Wildlife & Parks. 2002. Grizzly Bear Management Plan for Southwestern Montana 2002–2012.

Servheen, C. 1993. Grizzly bear recovery plan. Unpublished report to the U.S. Fish and Wildlife Service. University of Montana, Missoula, Montana. 181 pp.

Shaffer, M. 1992. Keeping the grizzly bear in the American West: an alternative recovery plan. The Wilderness Society, Washington, DC.

U.S. Fish and Wildlife Service. 1982. Grizzly bear recovery plan. Unpublished report prepared in cooperation with recovery team leader Don L. Brown of the Montana Department of Fish, Wildlife & Parks. 195 pp.

Grizzly Bear Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Genetic fragmentation among Montana populations	Genetic fragmentation among Montana populations	Ongoing research projects, including genetic analysis projects
Habitat loss, degradation, and fragmentation	Habitat loss, degradation, and fragmentation	Encourage and support opportunities such as land purchases or conservation easements to protect important grizzly habitats Keep road density at or below current levels to meet management goals outlined for grizzly recovery in western and southwest Montana
Human-bear and bear-livestock interactions	Human-bear and bear-livestock interactions	Continue and expand "living with bears" educational efforts in areas currently occupied or likely to be reoccupied by grizzly bears Continued interagency management efforts Maintain a grizzly bear education program to landowners that may have prairie grassland habitat that may harbor grizzly bears during at least portions of the year (refer to NCDE grizzly bear management plans) Managing recreational use may be needed in some areas to reduce conflicts with grizzly bears that come in to feed on berry crops Proactive management including public outreach, utilizing Montana citizens Reduce human-caused mortality, including vehicles and trains

Additional Citations

Aune, K., T. Stivers, and M. Madel. 1984. Rocky Mountain Front grizzly bear monitoring and investigation. Montana Department of Fish, Wildlife & Parks, Helena, Montana. 239 pp.

Craighead, J. J., J. Sumner, and G. Scaggs. 1982. A definitive system for analysis of grizzly bear habitat and other wilderness resources. Wildlife-Wildlands Institute Monograph 1. University of Montana, Missoula, Montana. 279 pp.

Dood, A. R., S. J. Atkinson, and V. J. Boccadori. 2006. Grizzly Bear Management Plan for Western Montana: final programmatic environmental impact statement 2006-2016. Montana Department of Fish, Wildlife and Parks, Helena, Montana. 163 pp.

Federal Register. 2007. Endangered and Threatened Wildlife and Plants; Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area. 72. Federal Register. 48. March 13, 2007. p. 11376.

Montana Fish, Wildlife & Parks. 2002. Grizzly Bear Management Plan for Southwestern Montana 2002–2012.

Servheen, C. 1983. Grizzly bear food habits, movements and habitat selection in the Mission Mountains, Montana. Journal of Wildlife Management 47:1026–1035.

Northern Bog Lemming (*Synaptomys borealis*) State Rank: S2
Species of Greatest Inventory Need Global Rank: G5

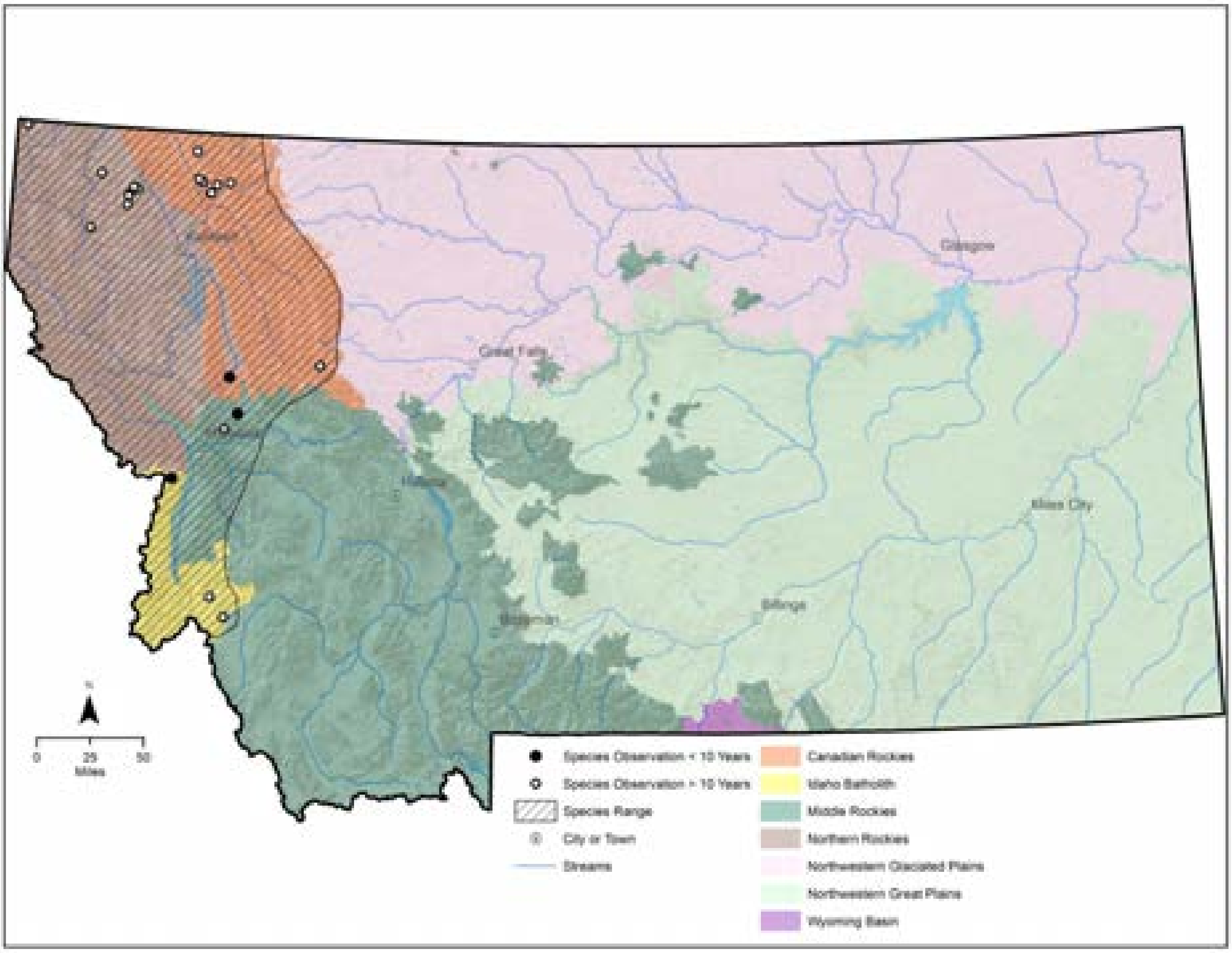

Figure 61. Montana range and observations of the northern bog lemming

Habitat

Northern bog lemmings occupy a variety of habitats throughout their range, especially near the southern edge of their global distribution. Typically, these habitats have high moisture levels and include sphagnum bogs, wet meadows, moist mixed and coniferous forests, montane sedge meadows, krummholz spruce-fir forests with dense herbaceous and mossy understory, alpine tundra, mossy streamsides, and even sagebrush slopes in the case of *S. b. artemisiae* in British Columbia (Clough and Albright 1987; West 1999; Streubel 2000). Within these habitats, they occupy surface runways and burrow systems up to 12 inches deep and can be found in small colonies with population densities that may reach 36 individuals per acre (Streubel 2000). They are active day and night throughout the year, feeding mostly on herbaceous vegetation (Foresman 2012). Young are born in nests that may be underground or on the surface in concealing vegetation. Northern bog lemmings in Montana have been found in at least 9 habitat types, including Engelmann spruce, subalpine fir, birch, willow, sedge (*Carex*), spike rush (*Eleocharis*), or combinations of the above, often occurring in wet meadows, fens, or boglike environments. Wright (1950) captured lemmings in a swampy area containing spruce trees, timothy, alder, and other moist-site plants (Wright 1950). The Upper Rattlesnake Creek specimen was captured in a wet-sedge/bluejoint meadow near subalpine fir (Adelman 1979). Areas with extensive moss mats, primarily sphagnum, are the most likely sites to find new populations (Wright 1950; Reichel and Beckstrom 1994; Reichel and Corn 1997; Pearson 1999).

Management

No coordinated management activities have been developed or implemented for this species in Montana. Nevertheless, some populations on USFS lands are provided added protection through special management/conservation policy guidelines applied to peatlands, including the Research Natural Area designation (Chadde et al. 1998). Research Natural Area designation typically prohibits manipulative management, such as timber harvest and livestock grazing. The Clean Water Act and state water quality standards protect water quality of these peatlands. Protection guidelines (Reichel and Corn 1997) should be applied to all sites where northern bog lemmings are known to occur, as well as potential peatland sites not yet surveyed for them.

Management Plan

None.

Northern Bog Lemming Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Outdated survey Poorly understood distribution of the species in Montana		Conservation and/or restoration of unoccupied potential habitat Consider including species in other comprehensive taxonomic plans Monitor known sites routinely to determine population persistence and trends Non-invasive capture techniques, such as scat genetic analysis, should be explored Target species for survey and inventory
Bogs/fens are threatened by poor range management practices, invasion of heavily grazed fens by exotic plants, and potential changes in the water regimes feeding the bogs/fens	Bogs/fens are threatened by poor range management practices, invasion of heavily grazed fens by exotic plants, and potential changes in the water regimes feeding the bogs/fens	Work with landowners and land management agencies to closely manage forest activities that may be detrimental to this species

Current Impacts	Future Threats	Conservation Actions
Conversion of forests to meadows by clearcutting, wildfire, or excessive thinning can increase populations of meadow voles and other species that compete with northern bog lemmings	Conversion of forests to meadows by clearcutting, wildfire, or excessive thinning can increase populations of meadow voles and other species that compete with northern bog lemmings	Maintain a buffer zone of 300 feet surrounding sphagnum or other fen moss mats or wetland areas that could provide corridors for dispersal to adjacent patches of suitable habitat
Human disturbances (timber harvesting and roads) are directly related to the decreased diversity of vascular plants, many of which are important to the diet of northern bog lemmings	Human disturbances (timber harvesting and roads) are directly related to the decreased diversity of vascular plants, many of which are important to the diet of northern bog lemmings	Work with landowners and land management agencies to limit activities that may be detrimental this species
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Routine monitoring of known populations

Additional Citations

Adelman, E. B. 1979. A survey of the nongame mammals in the Upper Rattlesnake Creek drainage of western Montana. MS thesis, University of Montana, Missoula Montana. 129 pp.

Chadde, S. W., J. S. Shelly, R. J. Bursik, R. K. Moseley, A. G. Evenden, M. Mantas, F. Rabe, and B. Heidel. 1998. Peatlands on national forests of the Northern Rockies.

Clough, G. C., and J. J. Albright. 1987. Occurrence of the northern bog lemming (*Synaptomys borealis*) in the northeastern United States. Canadian Field-Naturalist 101:611–613.

Foresman, K. R. 2012. Mammals of Montana. Mountain Press Publishing Company. Missoula, Montana.

Pearson, D. E. 1999. Small mammals of the Bitterroot National Forest: a literature review and annotated bibliography. General Technical Report RRS-GTR-25. Ogden, Utah: U.S.D.A. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 63 pp.

Reichel, J. D., and S. G. Beckstrom. 1994. Northern bog lemming survey: 1993. Unpublished report. Montana Natural Heritage Program. Helena, Montana. 87 pp.

Reichel, J. D., and J. G. Corn. 1997. Northern bog lemmings: survey, population parameters, and population analysis. Unpublished report to the Kootenai National Forest. Montana Natural Heritage Program, Helena, Montana. 27 pp.

Streubel, D. 2000. *Synaptomys borealis* (Northern Bog Lemming). Idaho Museum of Natural History. Idaho State Univ., Pocatello, Idaho. Website accessed at: http://imnh.isu.edu/digitalatlas/bio/mammal/Rod/Mice/nble/nble.htm

West, S. D. 1999. Northern bog lemming (*Synaptomys borealis*). Pp. 655–656 in the Smithsonian book of North American mammals, D. E. Wilson and S. Ruff, eds. Smithsonian Institution Press, Washington, DC.

Wright, P. L. 1950. *Synaptomys borealis* from Glacier National Park, Montana. Journal of Mammalogy 31(4):460.

<u>Northern Short-tailed Shrew</u> (*Blarina brevicauda*)

State Rank: S1S3
Global Rank: G5

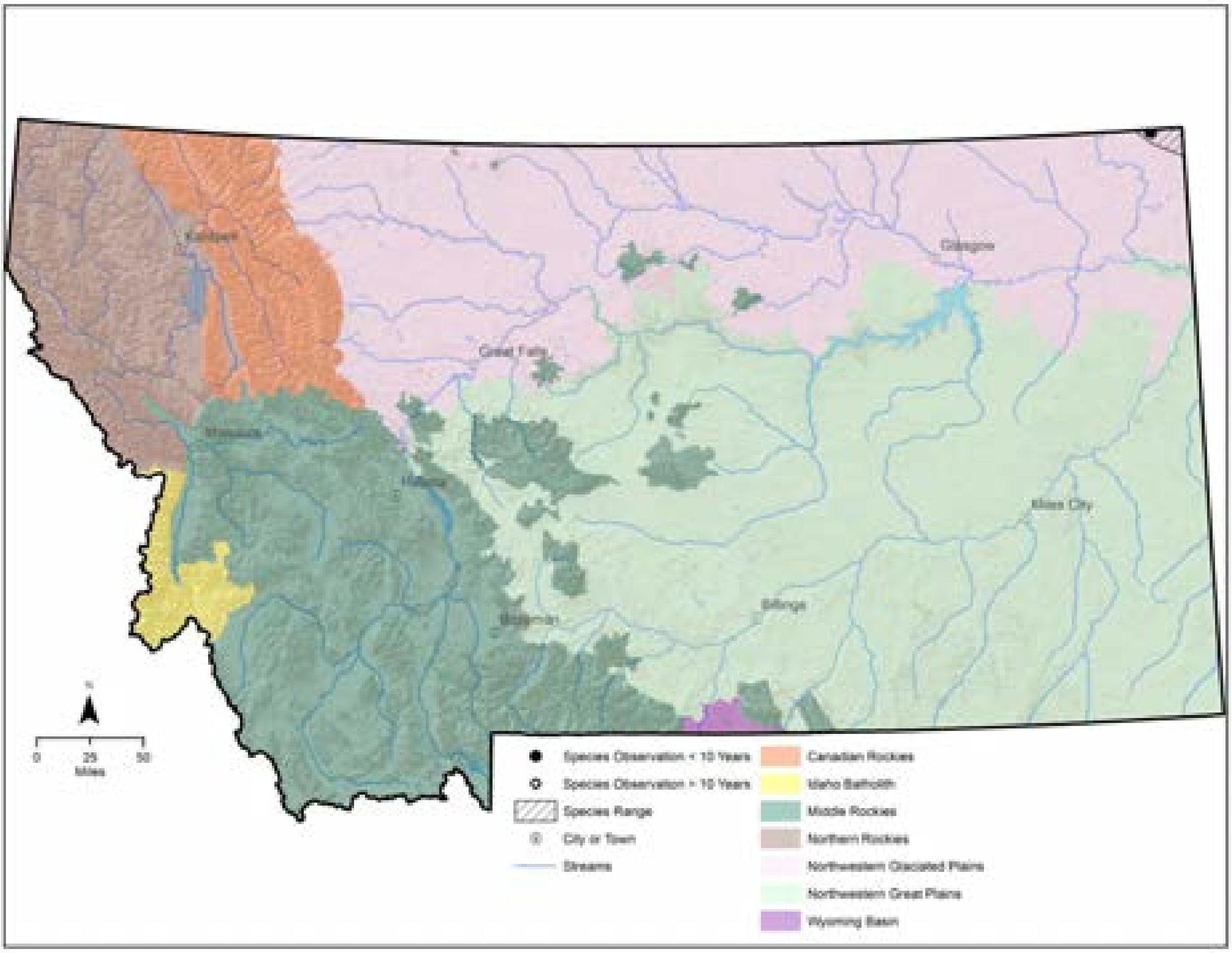

Figure 62. Montana range and observations of the northern short-tailed shrew

<u>Habitat</u>

Considered hypothetical in extreme northeastern Montana since at least 1968 (Hoffmann and Pattie 1968) until 2 captured in August 2005 in Sheridan County in marshy, prairie pothole habitat about 1.35 miles south of the Saskatchewan border. Farther east, within the main range of the species, northern short-tailed shrews are most common in hardwood forests with deep leaf litter and in brushy sites adjacent to ponds and streams, less common in conifer forest and grassland. In Manitoba this shrew is reported to be most common in grass-sedge marsh and willow-alder shrubs (Jones et al. 1983, van Zyll de Jong 1983, George et al. 1986). Northern short-tailed shrews seem to prefer wet areas, likely because the soil is loose for burrowing and there is a greater amount of prey (Foresman 2012).

<u>Management</u>

No management needs have been identified and no measures have been enacted to promote northern short-tailed shrew conservation in Montana. Wetland drainage or alteration, and loss of riparian vegetation (e.g. aspen, birch, willow, cottonwood) in woody draws and around springs or seeps, has the potential to negatively impact local populations. Additional surveys for northern short-tailed shrew can provide the basis for development of conservation protocols by determining its full distribution in Montana, the array of habitats in which it occurs, its relative abundance in different habitats, and, if properly designed, an idea of how different habitat disturbances affect this shrew at the margin of its global range.

Management Plan
None.

Northern Short-tailed Shrew Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Data poor		Target species for survey and inventory
Conversion of native habitat to cropland agriculture	Conversion of native habitat to cropland agriculture	Protect habitat that is at highest risk of conversion to cropland through the possible use of easements acquisition Work with landowners and land management agencies to limit activities that may be detrimental to this species
Oil and gas development	Oil and gas development	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (FWP In prep)
Wetland degradation or loss	Wetland degradation or loss	Work with landowners and land management agencies to limit activities that may be detrimental to this species

Additional Citations
Foresman, K. R. 2012. Mammals of Montana. Mountain Press Publishing Company. Missoula, Montana.

George, S. B., J. R. Choate and H. H. Genoways. 1986. *Blarina brevicauda*. American Society of Mammalogists, Lawrence, Kansas. Mammalian Species No. 261:1-8.

Hoffmann, R. S. and D. L. Pattie. 1968. A guide to Montana mammals: identification, habitat, distribution, and abundance. University of Montana, Missoula.

Jones, J. K. Jr., D. M. Armstrong, R. S. Hoffmann and C. Jones. 1983. Mammals of the northern Great Plains. University of Nebraska Press, Lincoln.

Montana Fish, Wildlife & Parks. In prep. Fish and Wildlife Recommendations for Oil and Gas Development in Montana.

van Zyll de Jong, C.G. 1983. Handbook of Canadian mammals. 1. Marsupials and insectivores. National Museum of Natural Sciences, National Museums of Canada, Ottawa, Canada.

<u>White-tailed Prairie Dog</u> (*Cynomys leucurus*) State Rank: S1
Global Rank: G4

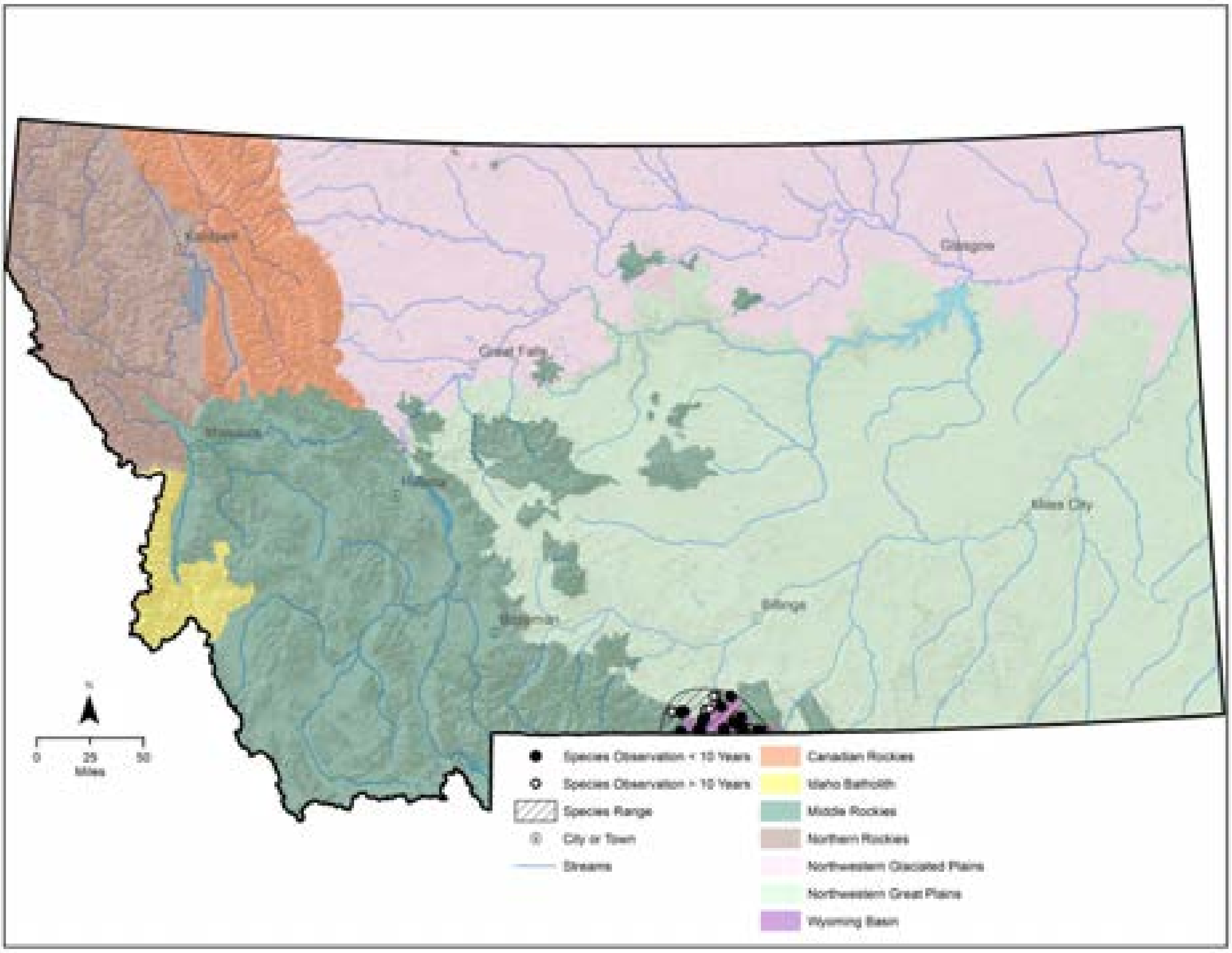

Figure 63. Montana range and observations of the white-tailed prairie dog

<u>Habitat</u>

Throughout their range, WTPDs inhabit xeric sites with mixed stands of shrubs and grasses. In Montana they inhabit sites dominated by Nuttall saltbrush with lesser amounts of big sage and areas with povery sumpweed (Flath 1979; Foresman 2012). They live at higher elevations and in meadows with more diverse grass and herb cover than do black-tailed prairie dogs (Hoffmann, in Wilson and Ruff 1999), and their range in Montana is at higher elevations than other sites within their distribution.

<u>Management</u>

Prairie dogs in Montana are currently an unregulated nongame species. Shooting of prairie dogs on public lands is allowed unless covered under a specific area closure, e.g., UL Bend on the Charles M. Russell National Wildlife Refuge. WTPDs are managed under the Conservation Plan for Black-tailed and White-tailed Prairie Dogs in Montana (Montana Prairie Dog Working Group 2002). WTPDs were found to be not warranted for listing under the ESA in May, 2010. Threats to the species however remain throughout its range to include habitat conversion and loss.

Translocation of WTPD in south central Montana was intended to re-establish the species at colonies from which they had been extirpated and to provide prey and habitat for a variety of other wildlife. Translocation was also intended to ensure maintenance of a viable population of WTPD in Montana. FWP translocated 44 WTPD within Carbon County with these intentions in mind and to remove individuals at colonies under threat from highway re-alignment. WTPD conservation in Montana also benefitted from FWP's leadership of the Montana Prairie Dog Working Group as well as involvement with WAFWA's efforts to conserve prairie dogs.

Management Plans

Bureau of Land Management. 1979. Habitat management plan for prairie dog ecotypes. BLM, Montana State Office. Wildlife Habitat Area MT-02-06-07-S1. 61 pp.

Conservation Plan for Black-tailed and White-tailed Prairie Dogs in Montana. Montana Prairie Dog Working Group 2002.

White-tailed Prairie Dog Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Conversion of native rangelands to agriculture, and, to a lesser degree, residential development	Conversion of native rangelands to agriculture, and, to a lesser degree, residential development	Continue to develop, refine, and implement financial incentives for landowners to maintain prairie dogs Support strategic conservation easements by conservation organizations and public agencies to enhance critical habitat Work with landowners and land management agencies to limit activities that may be detrimental to this species
Disease, particularly sylvatic plague (*Yersinia pestis*)	Disease, particularly sylvatic plague (*Yersinia pestis*)	Assist in funding research projects targeting effects of disease on prairie ecosystems Continue to support plague vaccine testing and implement as recommended if found to be a valuable tool
Poor grazing practices	Poor grazing practices	Support livestock grazing management that maintains or improves native rangeland integrity Support research evaluating livestock grazing systems that enhance WTPD habitat features and ultimately WTPD populations

Current Impacts	Future Threats	Conservation Actions
	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary Reintroduce WTPD to sites that were formerly occupied until the early 1990s Secure WTPD over a larger portion of their historic range to increase likelihood of persistence in a changing environment

Additional Citations

Flath, D. L. 1979. Status of the white-tailed prairie dog in Montana. Proceedings of the Montana Academy of Sciences 38:63–67.

Foresman, K. R. 2012. Mammals of Montana. Mountain Press Publishing Company. Missoula, Montana.

Montana Prairie Dog Working Group. 2002. Conservation Plan for Black-tailed and White-tailed Prairie Dogs in Montana. Montana Fish, Wildlife and Parks. Helena Montana. 51 pp.

Wilson, D. E., and S. Ruff. 1999. The Smithsonian book of North American mammals. Smithsonian Institution, Washington, DC.

Reptiles

Milksnake (*Lampropeltis triangulum)* State Rank: S2
Global Rank: G5

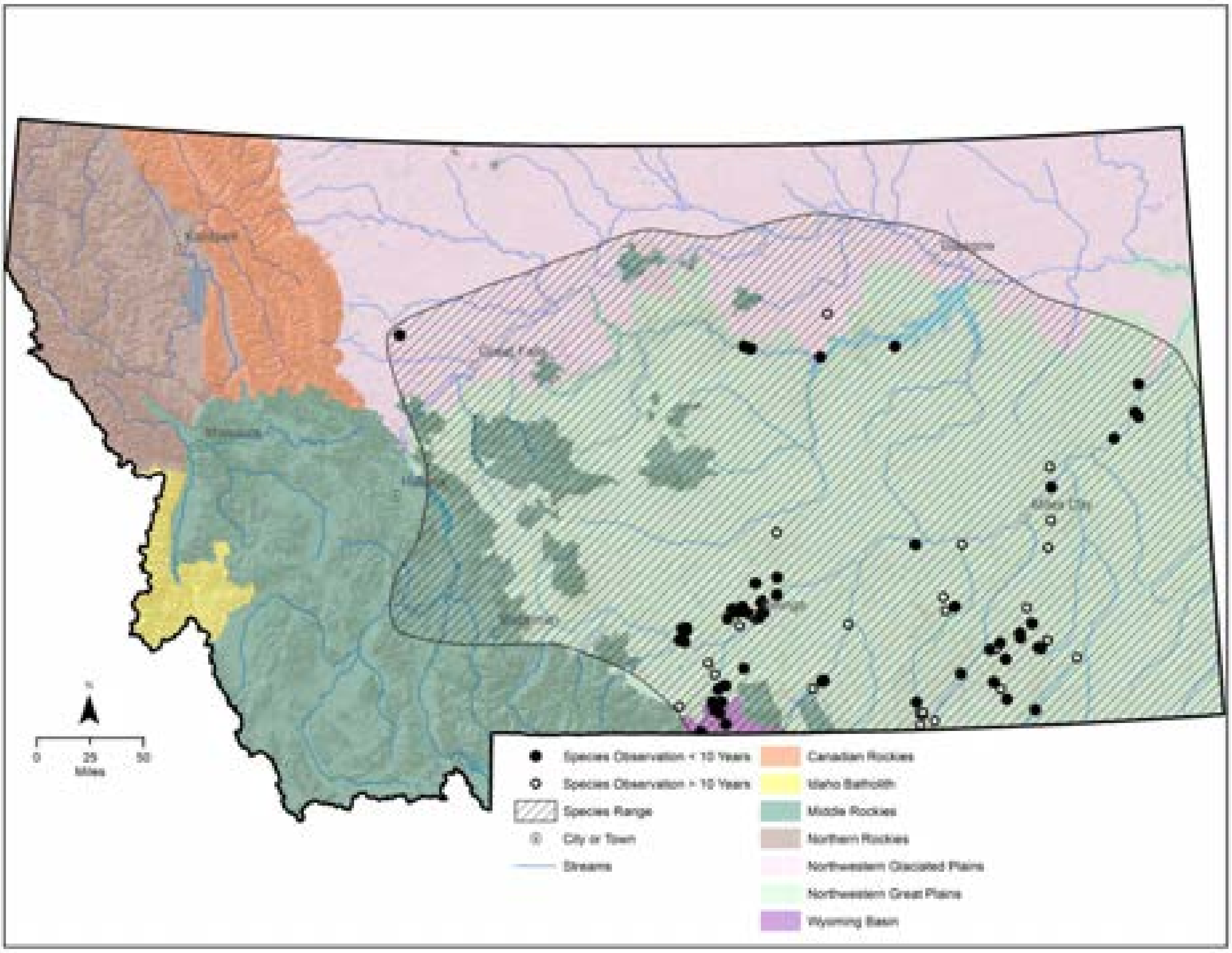

Figure 64. Montana range and observations of the milksnake

Habitat

Little specific information is available. Milksnakes have been reported in areas of open sagebrush grassland habitat (Dood 1980) and ponderosa pine savannah with sandy soils (Hendricks 1999; B. Maxell, personal communication; L. Vitt, personal communication), most often in or near areas of rocky outcrops and hillsides or badland scarps, sometimes within city limits.

Management

So few recent milksnake records exist for Montana (Maxell et al. 2003) that it is difficult to determine if management activity is needed. Nevertheless, the widely scattered recent records indicate that milksnakes continue to occupy a large part of the known range in the state, and some sites near a large urban center have remained occupied for the last 40 to 45 years (L. Vitt, personal communication). Management for this species is hampered by a lack of basic information on abundance, food habits, and habitat associations.

Management Plan
None

Milksnake Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Distribution, status, and biology are poorly understood	Distribution, status, and biology are poorly understood	Develop a comprehensive taxonomic management plan (e.g., for reptiles) that includes the milksnake Specifically survey for this species in suitable habitat to further define its range in Montana
Pet trade industry	Pet trade industry	Increase public education and information on reptile biology and raise awareness of the importance of den and nest sites

Additional Citations

Dood, A. R. 1980. Terry badlands nongame survey and inventory: final report. (BLM Contract #YA-512-CT8-217.) Montana Department of Fish, Wildlife & Parks. 70 pp.

Hendricks, P. 1999. Amphibian and reptile survey of the Bureau of Land Management, Miles City District, Montana. Montana Natural Heritage Program, Helena, Montana. 80 pp.

Maxell, B., K. J. Werner, P. Hendricks, and D. Flath. 2003. Herpetology in Montana: a history, status summary, checklists, dichotomous keys, accounts for native, potentially native, and exotic species, and indexed bibliography. Olympia, Washington: Society for Northwestern Vertebrate Biology. Northwest Fauna 5:1–138.

<u>Smooth Greensnake</u> (*Opheodrys vernalis*) State Rank: S2
Species of Greatest Inventory Need Global Rank: G5

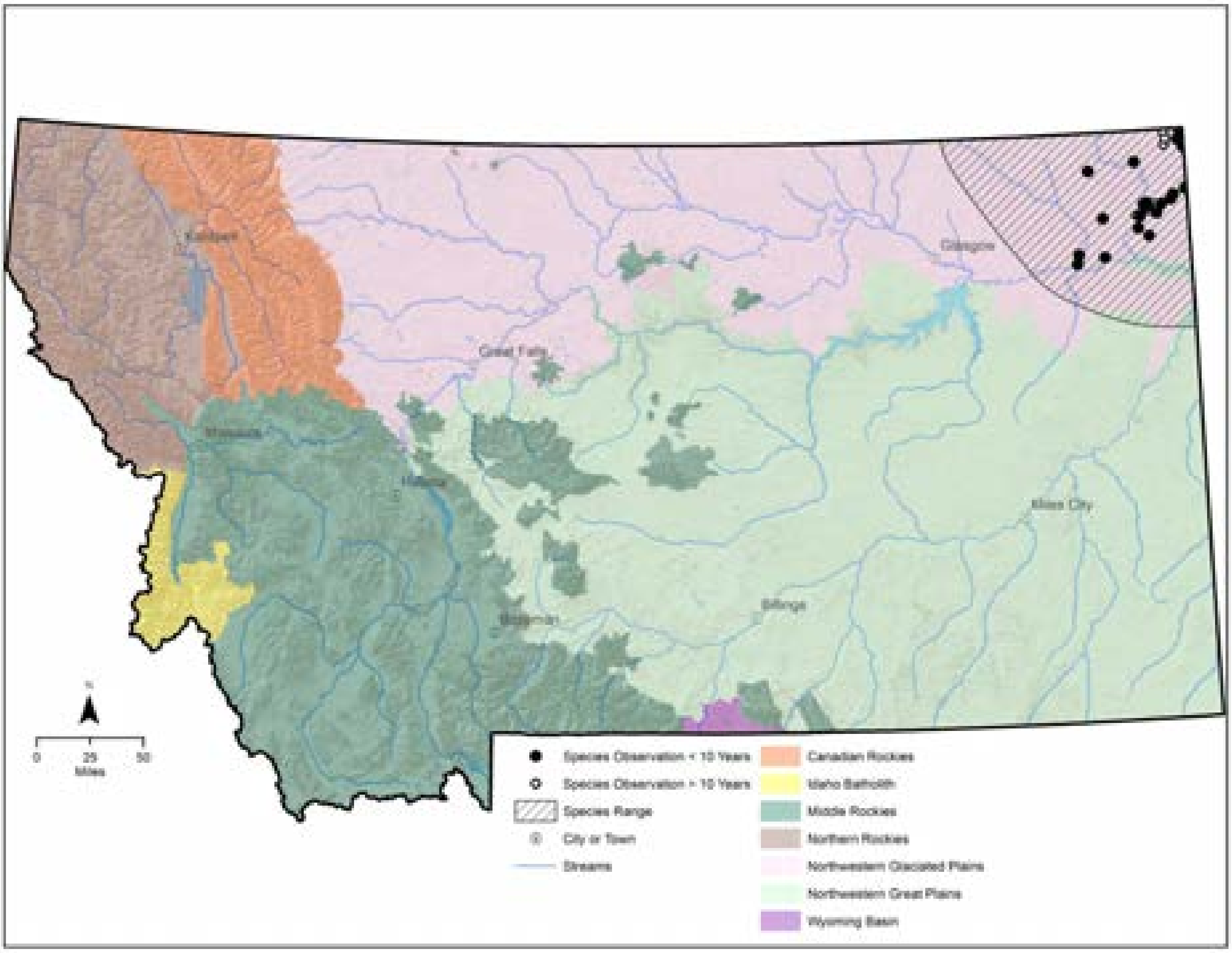

Figure 65. Montana range and observations of the smooth greensnake

Habitat

Little information is available for the species in Montana, though it has been reported on residential lawns, in city parks, along ditches in the prairie pothole region, and around wetland complexes. Based upon observations outside Montana, the smooth greensnake is known to occupy meadows, grassy marshes, moist grassy fields at forest edges, mountain shrublands, stream borders, bogs, open moist woodlands, abandoned farmlands, and vacant lots. Periods of inactivity are spent underground, beneath woody debris and rocks or in rotting wood. Smooth greensnakes have been found hibernating in abandoned ant mounds. Most activity is restricted to the ground, but they may climb into low vegetation and sometimes enter water (Hammerson 1999). This species may also be found in damp meadows bordering streams and lakes as well as drier, rocky areas, but usually only if grass or similar vegetation is present.

Management Plan

None

Smooth Greensnake Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Distribution, status, and biology in Montana are poorly understood Lacks baseline survey		Develop a comprehensive taxonomic management plan (e.g., for reptiles) that includes the smooth greensnake Specifically survey for this species in suitable habitat to further define its range in Montana
Conversion of native habitat to cropland agriculture	Conversion of native habitat to cropland agriculture	Protect habitat that is at highest risk of conversion to cropland through the possible use of easements acquisition Work with landowners and land management agencies to limit activities that may be detrimental to this species
Oil and gas development	Oil and gas development	Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (FWP In prep)
Pet trade industry	Pet trade industry	Increase public education and information on reptile biology and raise awareness of the importance of den and nest sites
Wetland degradation or loss	Wetland degradation or loss	Work with landowners and land management agencies to limit activities that may be detrimental to this species

<u>Additional Citations</u>

Hammerson, G. A. 1999. Amphibians and reptiles in Colorado. 2nd ed. University Press of Colorado, Boulder, Colorado. 484 pp + xxvi.

Montana Fish, Wildlife & Parks. In prep. Fish and Wildlife Recommendations for Oil and Gas Development in Montana.

Western Hog-nosed Snake (*Heterodon nasicus*) State Rank: S2
Species of Greatest Inventory Need Global Rank: G5

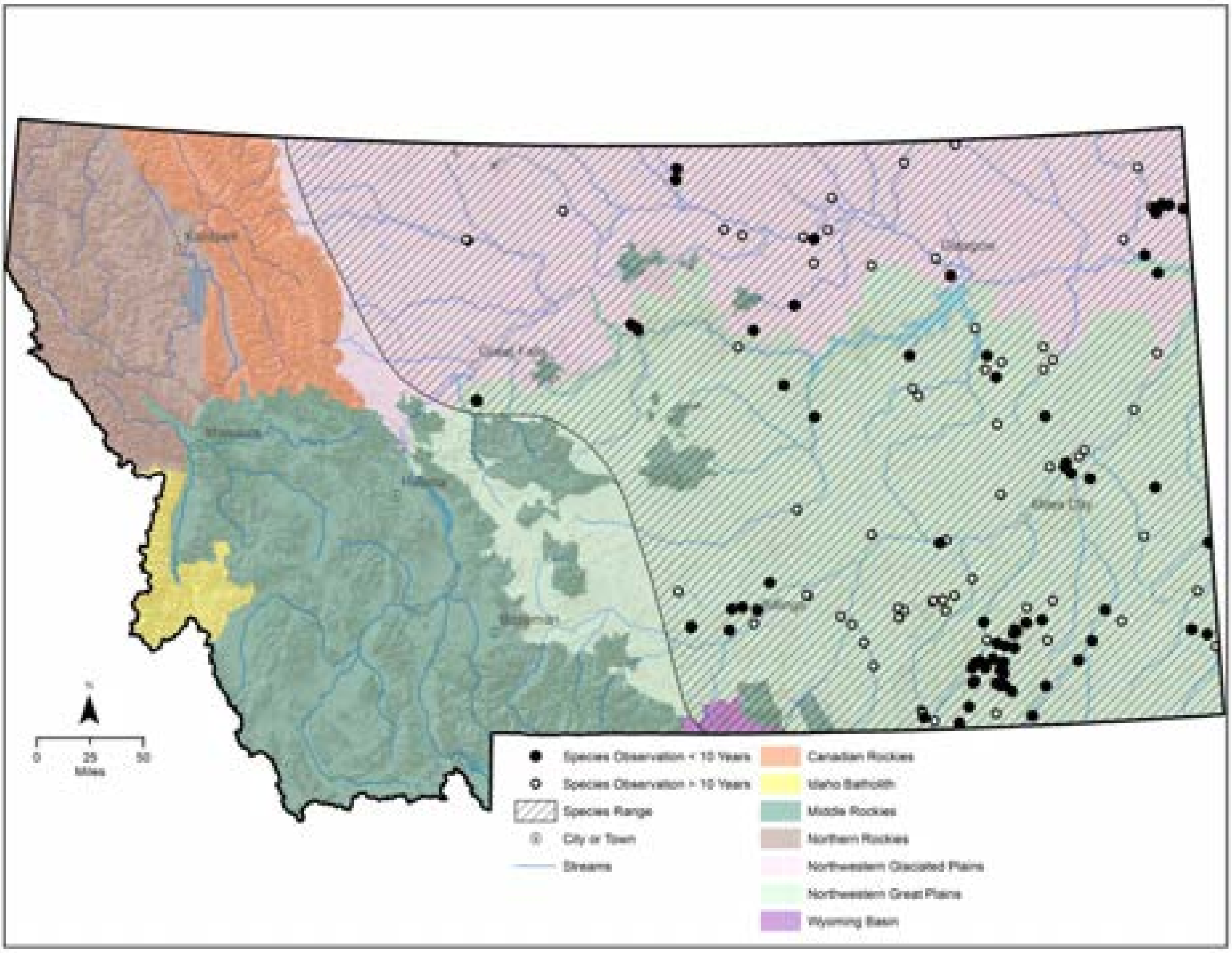

Figure 66. Montana range and observations of the western hog-nosed snake

Habitat

Little specific information for the state is available. Western hog-nosed snakes have been reported in areas of sagebrush grassland habitat (Dood 1980) and near pine savannah in grassland underlain by sandy soil (Reichel 1995; Hendricks 1999).

In other locations, their apparent preference for arid areas, farmlands, and floodplains, particularly those with gravelly or sandy soil, has been noted. They occupy burrows or dig into soil and can be found under rocks or debris during periods of inactivity (Baxter and Stone 1985; Hammerson 1999; Stebbins 2003).

Management

Apparently the western hog-nosed Snake was relatively abundant in Montana during the late 19th Century, at least in some regions; in 1876 it was the third most common reptile (after the prairie rattlesnake and greater short-horned lizard) along the Missouri River between Fort Benton and the mouth of the Judith River (Cope 1879). The few recent records suggest now the species is uncommon throughout Montana, although its status is largely unknown. Even though this snake is still encountered across its historical range, it is less abundant than in the 19th century probably due to extensive habitat loss associated with conversion of prairie to agricultural landscapes. As in other regions, an unknown percentage of local populations experiences road mortality, as many specimen and observation records are of road-killed individuals. Draining of prairie wetlands may have negative impacts on the prey (toads and frogs particularly, and perhaps turtle eggs) this snake prefers. Management in Montana for this species is hampered by a lack of basic information on abundance, food habits, and habitat associations, but is probably best effected for the long-term by protecting suitable prairie habitats from conversion to agricultural uses.

Management Plan
None

Western Hog-nosed Snake Current Impacts, Future Threats, and Conservation Actions

Current Impacts	**Future Threats**	**Conservation Actions**
Distribution, status, and habitat uses are poorly understood Lacks baseline survey		Develop a comprehensive taxonomic management plan (e.g., for reptiles) that includes the western hog-nosed snake Target species for survey and inventory suitable habitat to further define its range in Montana
Declines in prey (amphibians)	Declines in prey (amphibians)	Survey for both western hog-nosed snakes and their prey base in suitable habitat to continue determining their abundance and range in Montana, as well as availability of prey Work with landowners and other agencies to limit activities that may be detrimental to wetlands and amphibians
Dependent on natural flood regimes that provide gravel and sandy beaches in which they and their amphibian prey can burrow	Dependent on natural flood regimes that provide gravel and sandy beaches in which they and their amphibian prey can burrow	Maintain natural flood regime Work with landowners and other agencies to establish natural flows
Pet trade industry	Pet trade industry	Increase public education on reptile biology and raise awareness of the importance of den and nest sites
Some evidence for declines are potentially associated with habitat loss	Some evidence for declines are potentially associated with habitat loss	Work with landowners and land management agencies to limit activities that may be detrimental to wetlands and amphibians

Additional Citations

Baxter, G. T., and M. D. Stone. 1985. Amphibians and reptiles of Wyoming. 2nd ed. Wyoming Game and Fish Department, Cheyenne, Wyoming.

Cope, E. D. 1879. A contribution to and zoology of Montana. American Naturalist 13(7):432–441.

Dood, A. R. 1980. Terry badlands nongame survey and inventory: final report. (BLM Contract #YA-512-CT8-217.) Montana Department of Fish, Wildlife & Parks. 70 pp.

Hammerson, G. A. 1999. Amphibians and reptiles in Colorado. 2nd ed. University Press of Colorado, Boulder, Colorado.

Hendricks, P. 1999. Amphibian and reptile survey of the Bureau of Land Management, Miles City District, Montana. Montana Natural Heritage Program, Helena, Montana. 80 pp.

Reichel, J. D. 1995. Preliminary amphibian and reptile survey of the Sioux District of the Custer National Forest: 1994. Montana Natural Heritage Program. Helena, Montana. 75 pp.

Stebbins, R. C. 2003. A field guide to western reptiles and amphibians. 3rd ed. Houghton Mifflin Company, Boston, Massachusetts.

SPECIES OF GREATEST INVENTORY NEED

There are 24 SGCN that are considered to be in greatest inventory need as well as greatest conservation need. In addition, there are 20 PSOC that are in greatest inventory need. All 44 species have been identified as SGIN either because they lack baseline surveys or they have outdated surveys. This SGIN list includes one amphibian, 20 birds, 3 fish, 13 mammals, and 7 reptiles. Of these, one amphibian, 5 birds, one fish, one mammal, and 2 reptiles have a State Rank of S1 or S2 and had conservation actions developed for them under the Species of Greatest Conservation Need section above.

The maps in this section were developed from the Montana Field Guide (MNHP and FWP 2013a) and the Point Observation Database. Please note that some species may have no or few observations identified. This may not be a true representation of them within Montana as the observations only may be incidental as no formal survey has ever been conducted.

AMPHIBIANS

The following amphibian SGIN is also an SGCN. Information on this species can be found in the previous section, Species of Greatest Conservation Need.

Coeur d'Alene Salamander (*Plethodon idahoensis*) **SGCN**
This species has an outdated survey and needs to be targeted for survey and inventory. For more information, see Coeur d'Alene Salamander under Species of Greatest Conservation Need in the previous section.

BIRDS

Barrow's Goldeneye (*Bucephala islandica*) PSOC

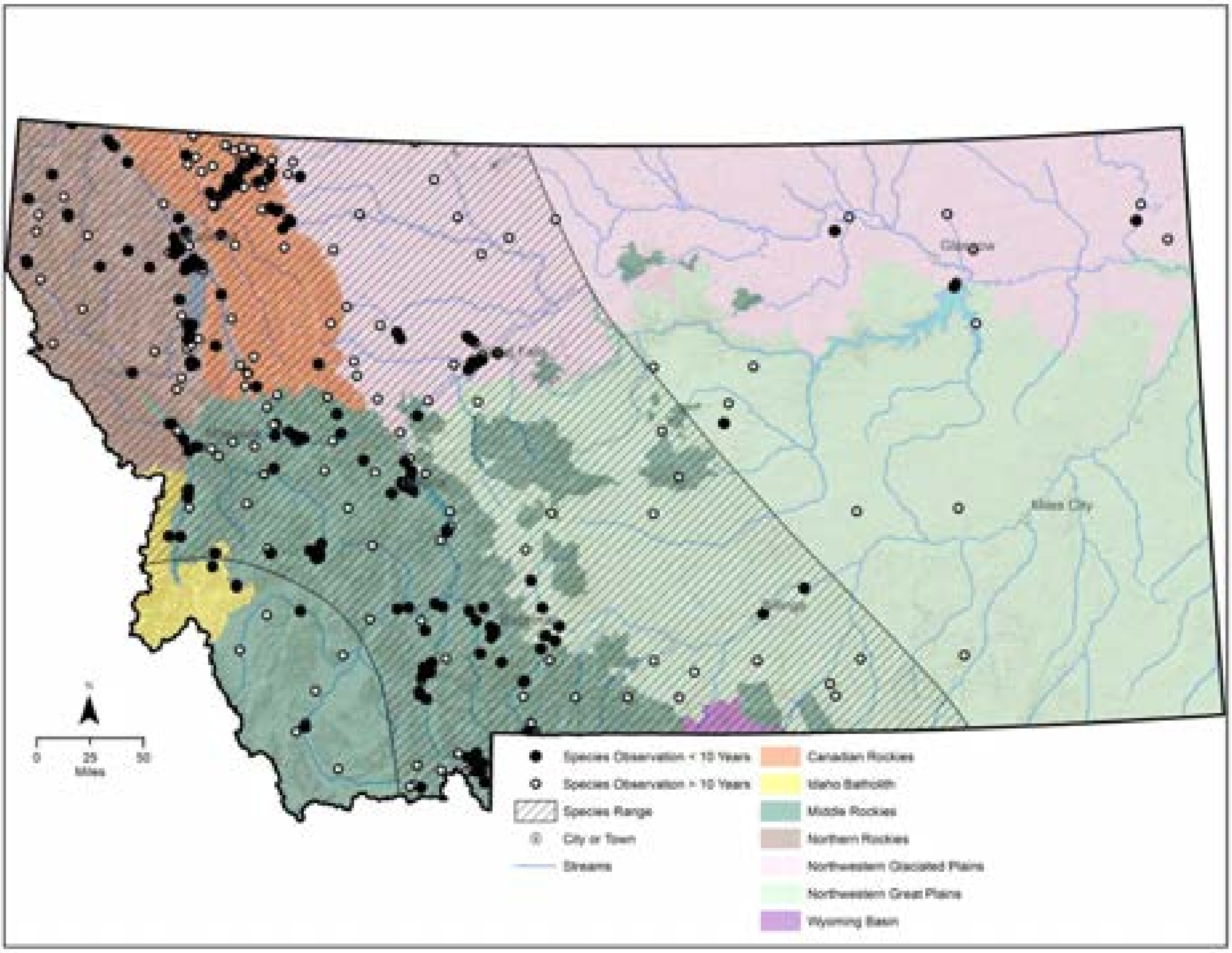

Figure 67. Montana range and observations of Barrow's goldeneye

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Black-billed Cuckoo (*Coccyzus erythropthalmus*)

SGCN
State Rank: S3B
Global Rank: G5

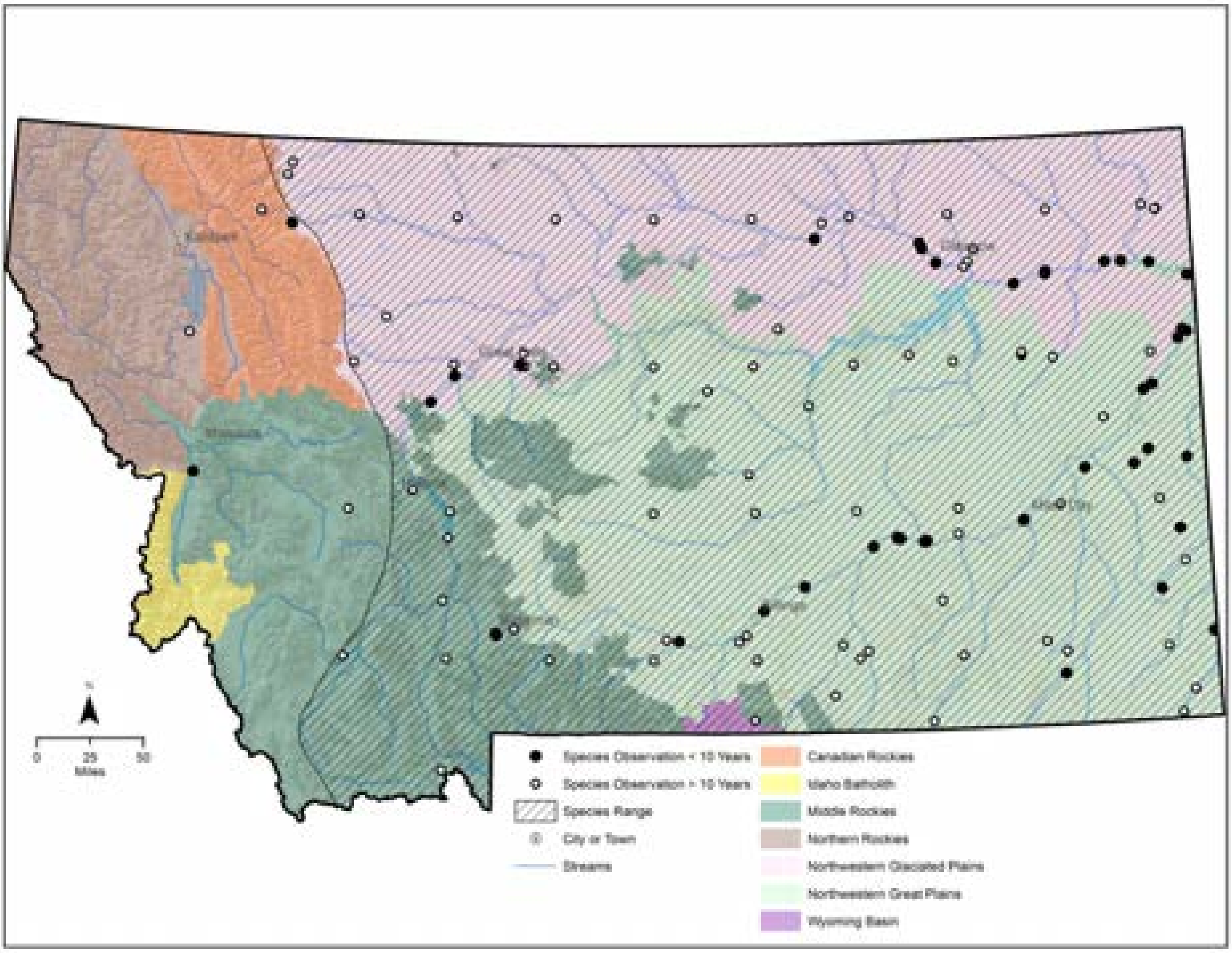

Figure 68. Montana range and observations of the black-billed cuckoo

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Boreal Owl (*Aegolius funereus*)</u> **PSOC**

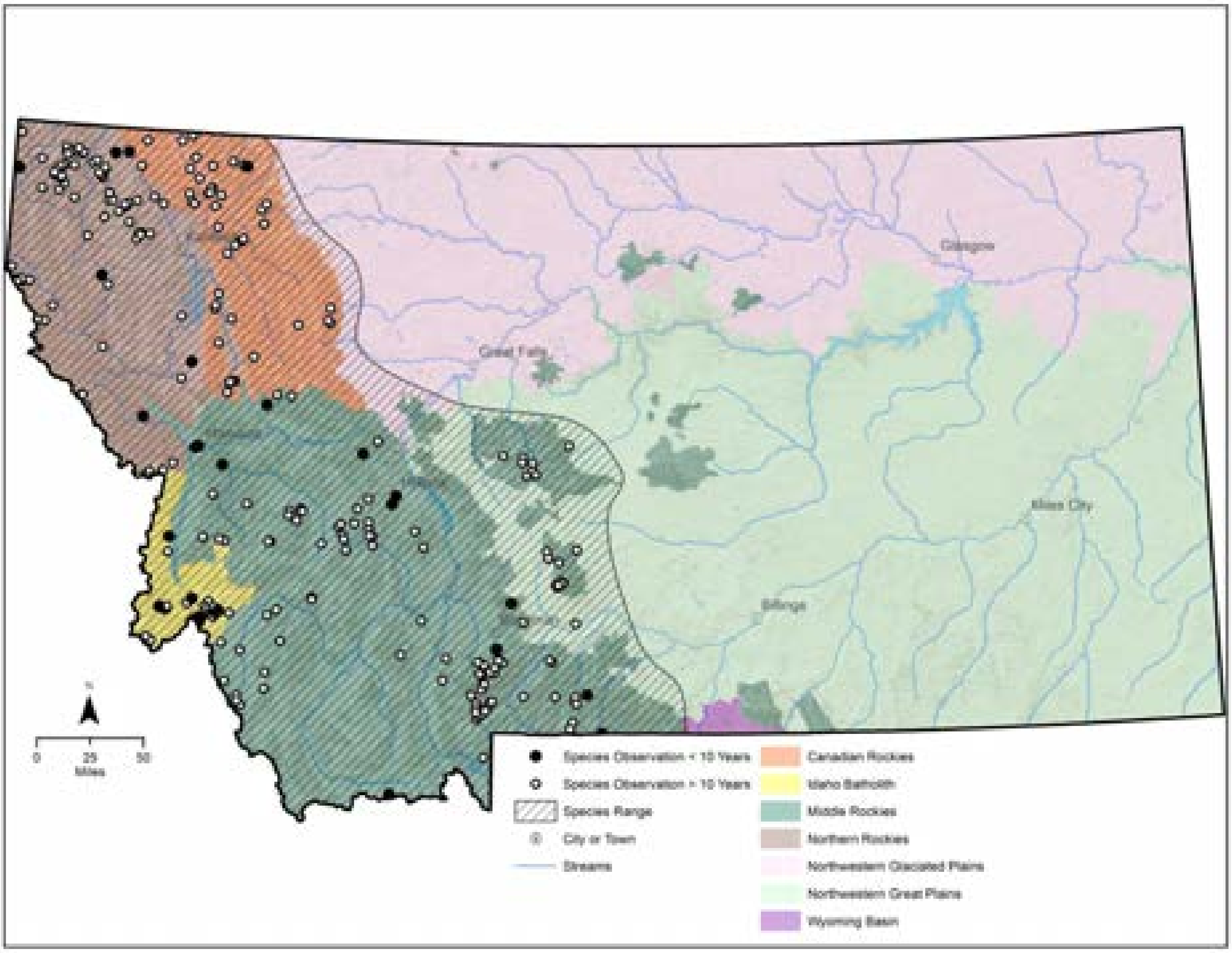

Figure 69. Montana range and observations of the boreal owl

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Broad-tailed Hummingbird (*Selasphorus platycercus*)</u> **PSOC**

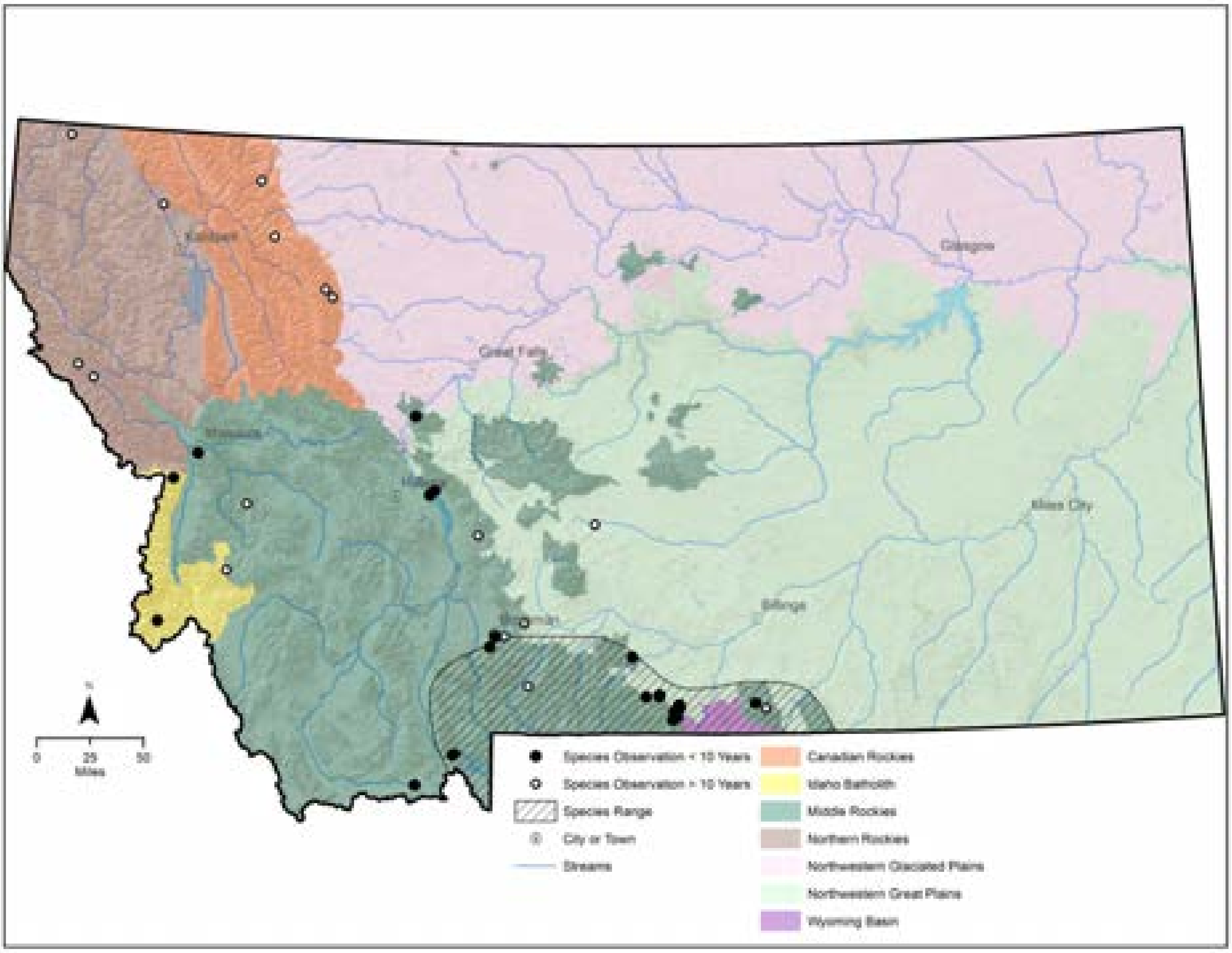

Figure 70. Montana range and observations of the broad-tailed hummingbird

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Chimney Swift (*Chaetura pelagic*)</u> **PSOC**

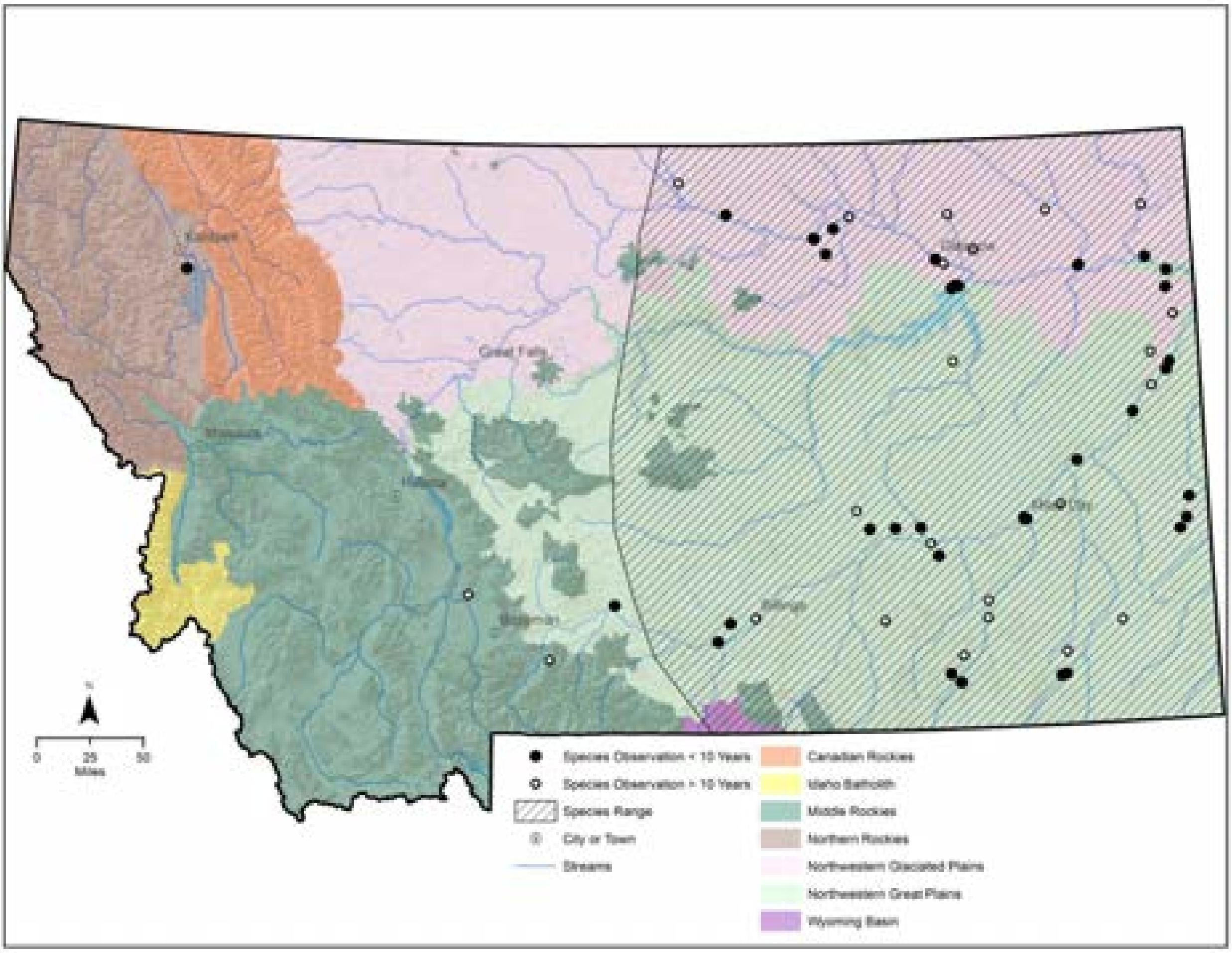

Figure 71. Montana range and observations of the chimney swift

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Common Poorwill (*Phalaenoptilus nuttallii*) **PSOC**

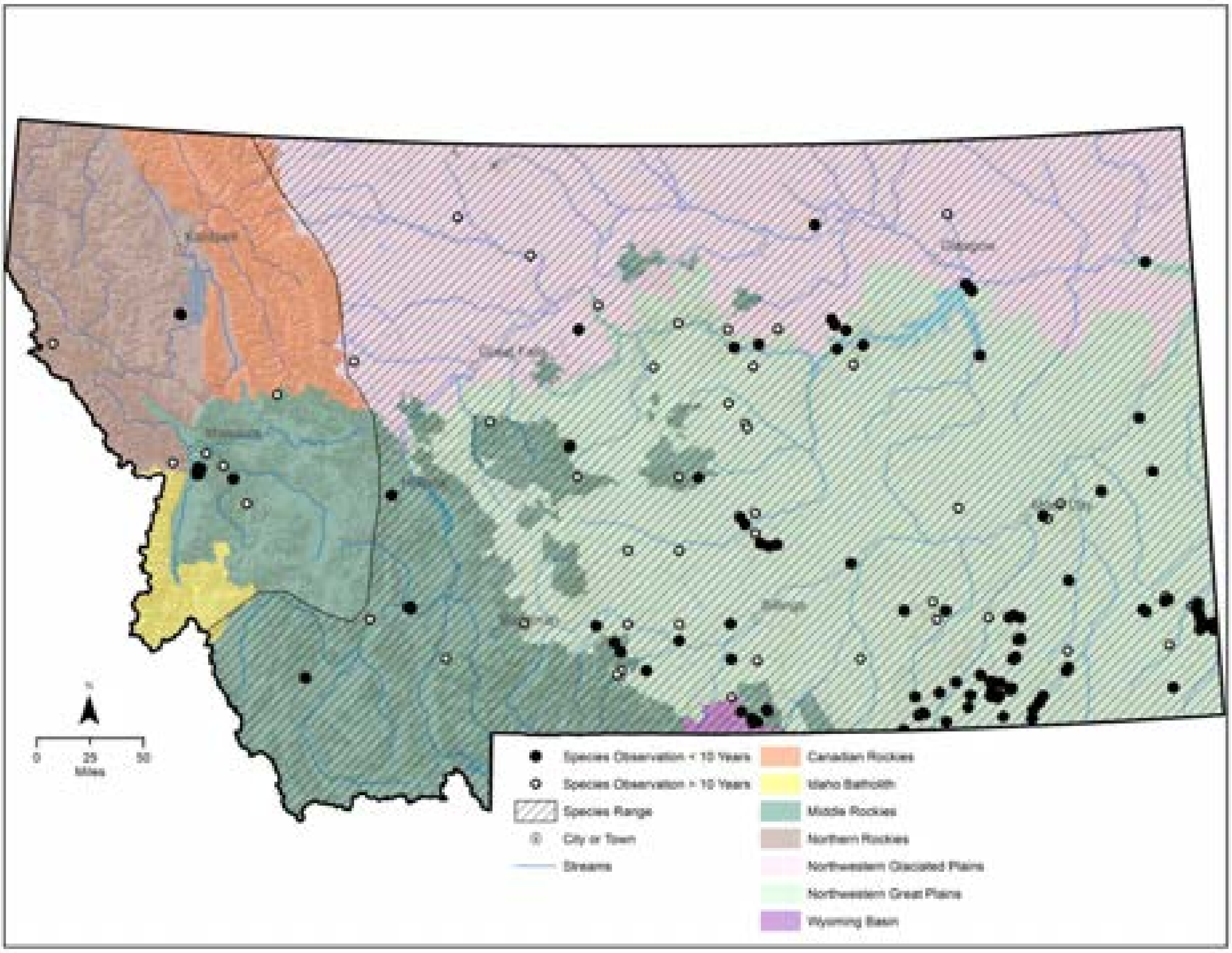

Figure 72. Montana range and observations of the common poorwill

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Eastern Screech-Owl (*Megascops asio*)</u> **PSOC**

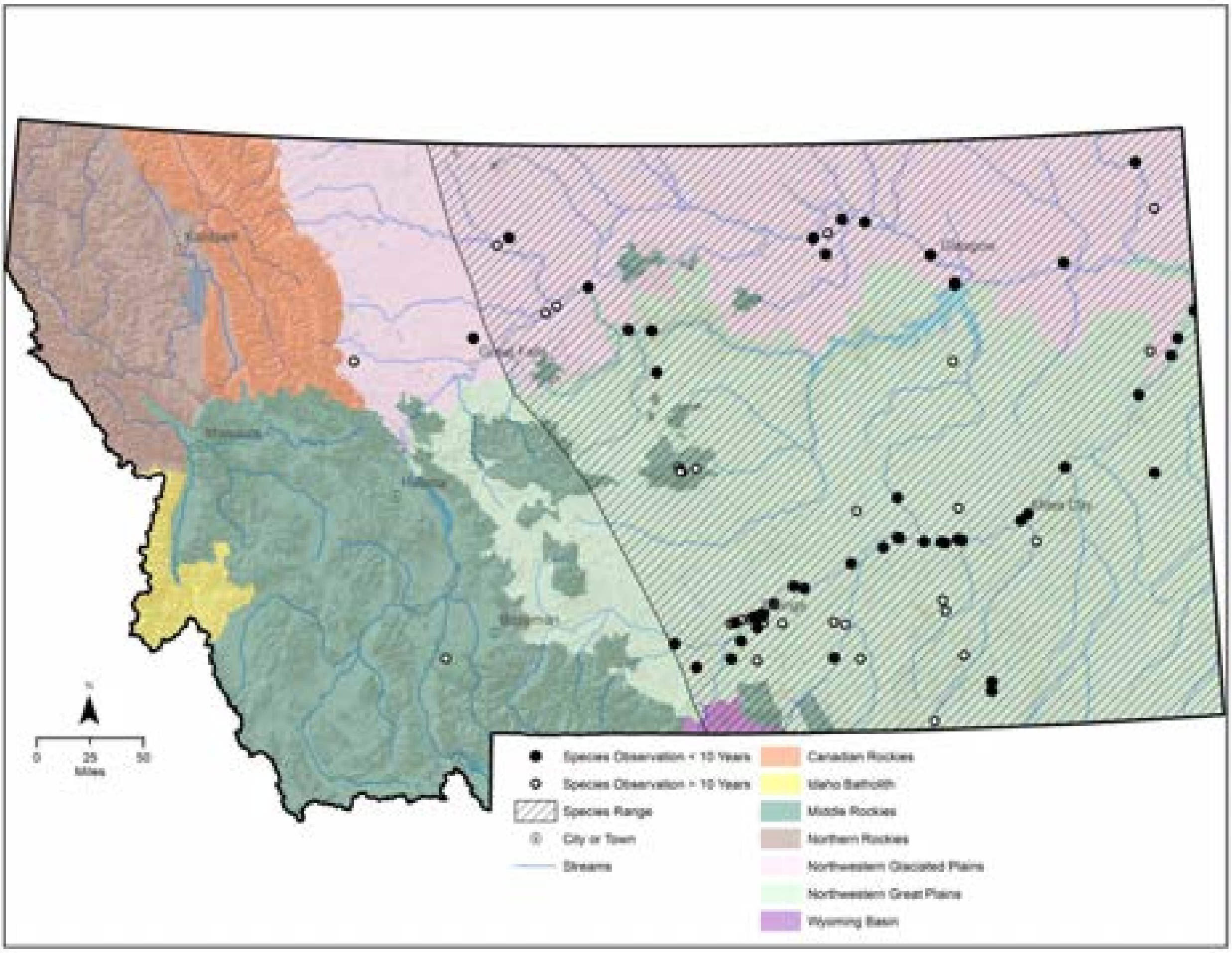

Figure 73. Montana range and observations of the eastern screech-owl

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Great Gray Owl (*Strix nebulosa*)

SGCN
State Rank: S3
Global Rank: G5

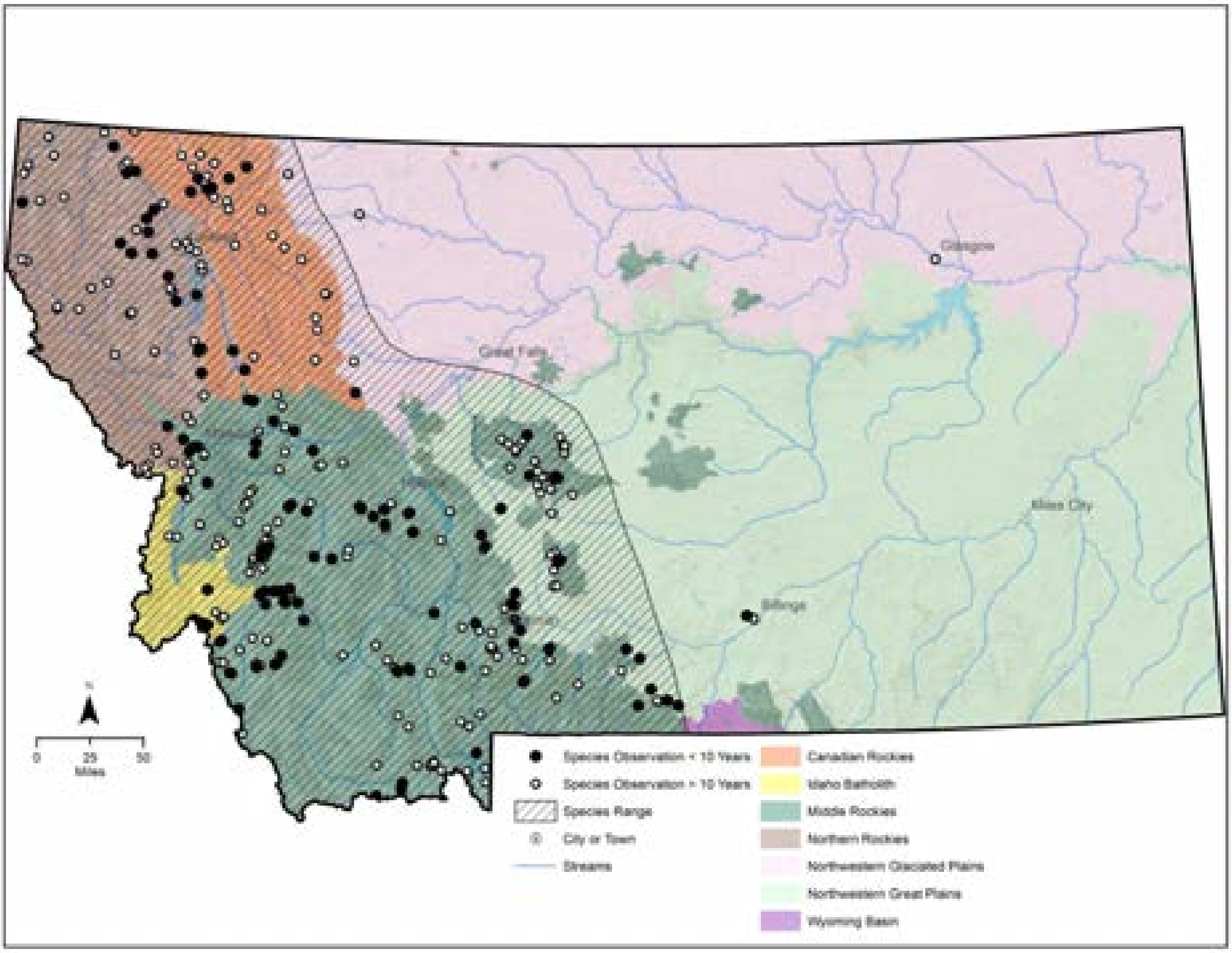

Figure 74. Montana range and observations of the great gray owl

This species lacks a baseline survey and needs to be targeted for survey and inventory.

Hooded Merganser (*Lophodytes cucullatus*) **PSOC**

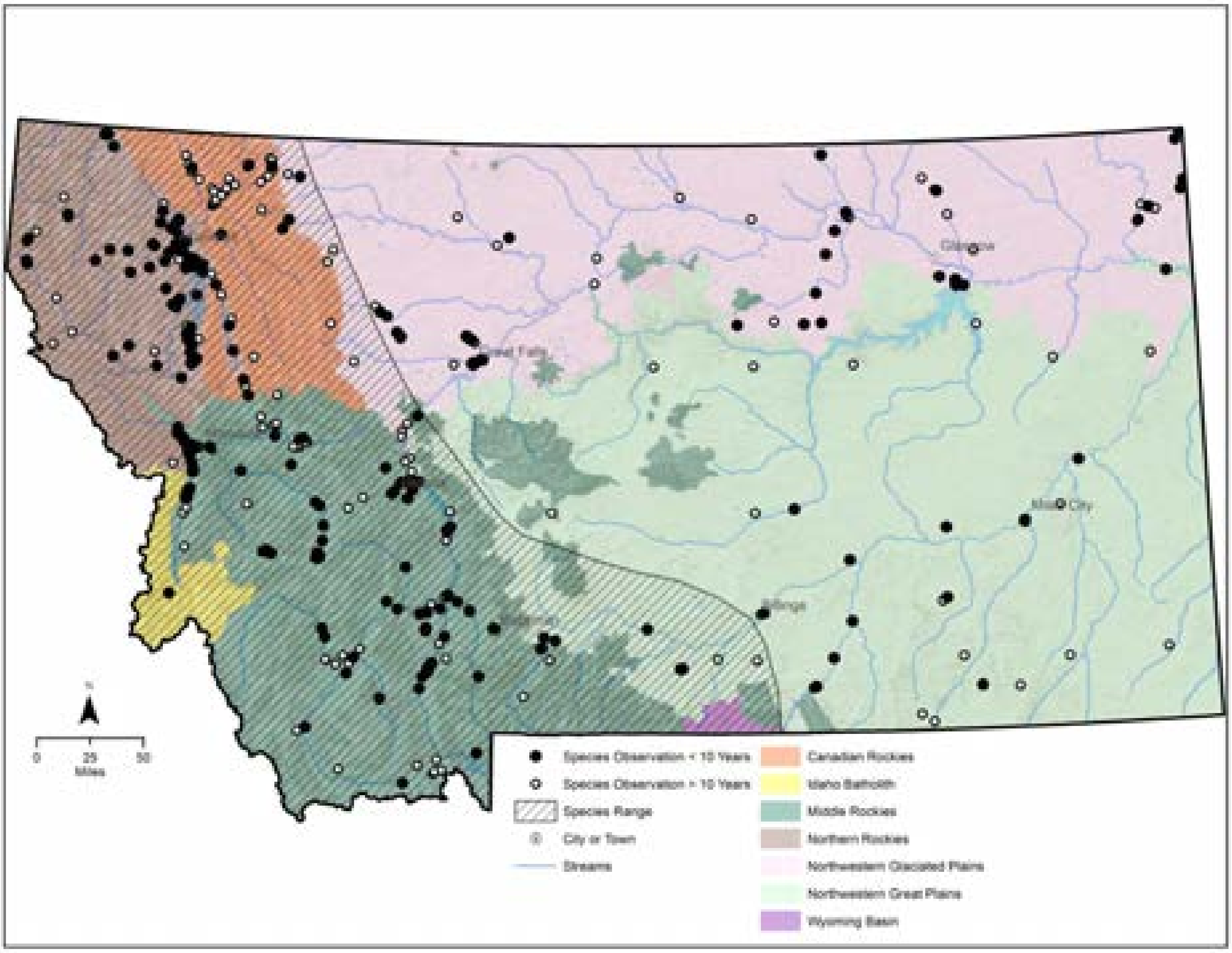

Figure 75. Montana range and observations of the hooded merganser

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Northern Hawk Owl (*Surnia ulula*)</u>

SGCN
State Rank: S3
Global Rank: G5

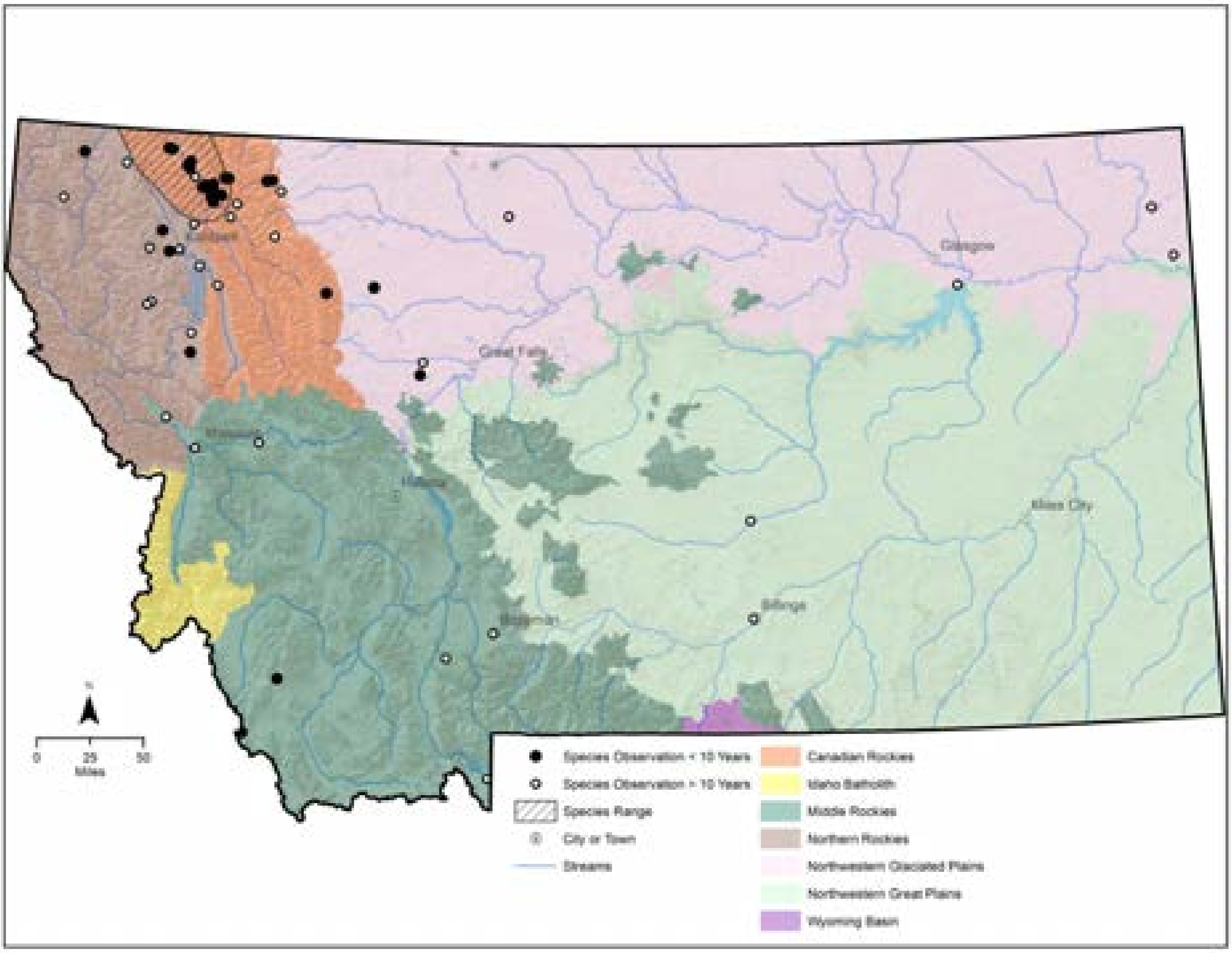

Figure 76. Montana range and observations of the northern hawk owl

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Sage Sparrow (*Artemisiospiza belli*)</u>

SGCN
State Rank: S3B
Global Rank: G5

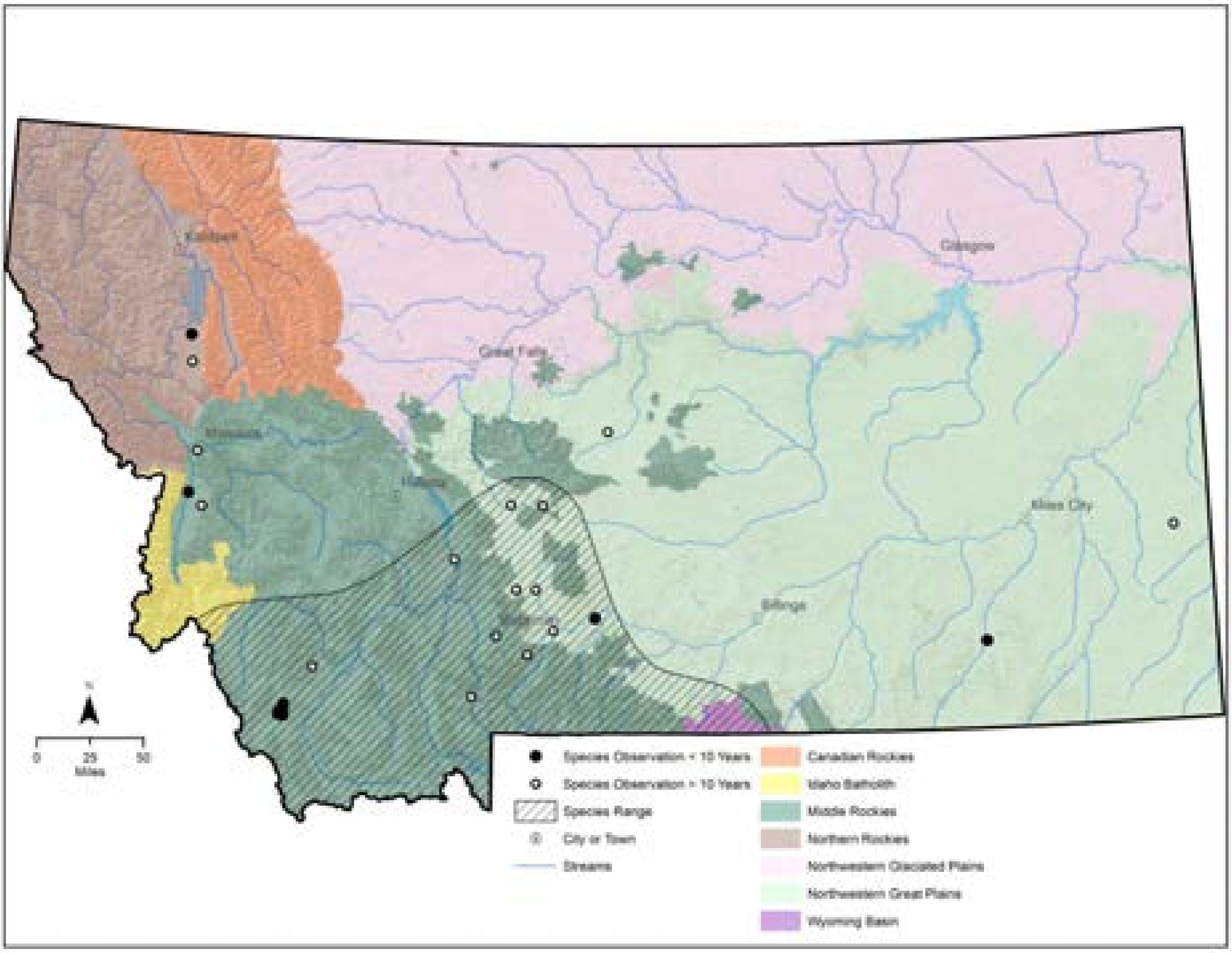

Figure 77. Montana range and observations of the sage sparrow

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Short-eared Owl (*Asio flammeus*) **PSOC**

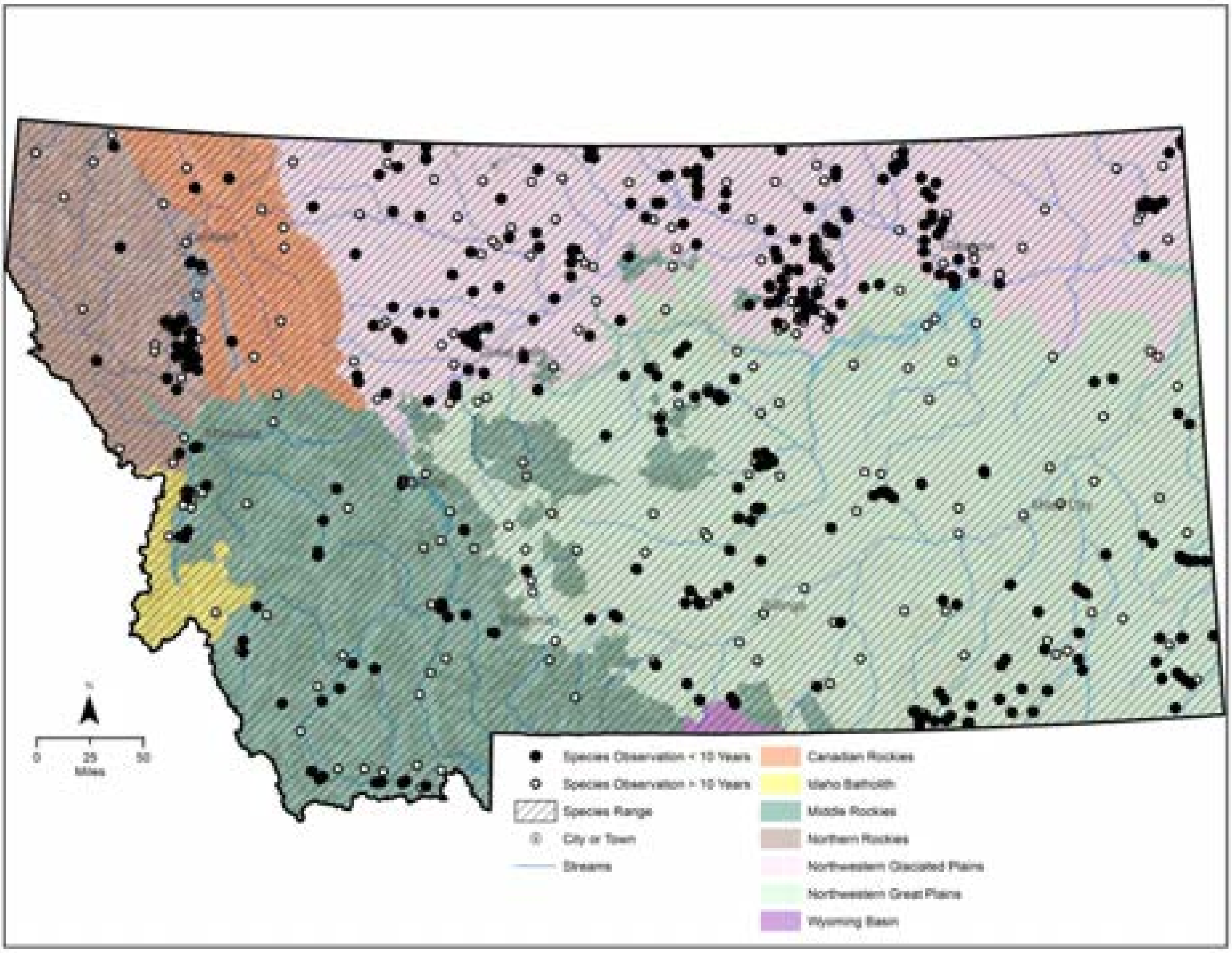

Figure 78. Montana range and observations of the short-eared owl

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Western Screech-Owl (*Megascops kennicottii*)</u> **PSOC**

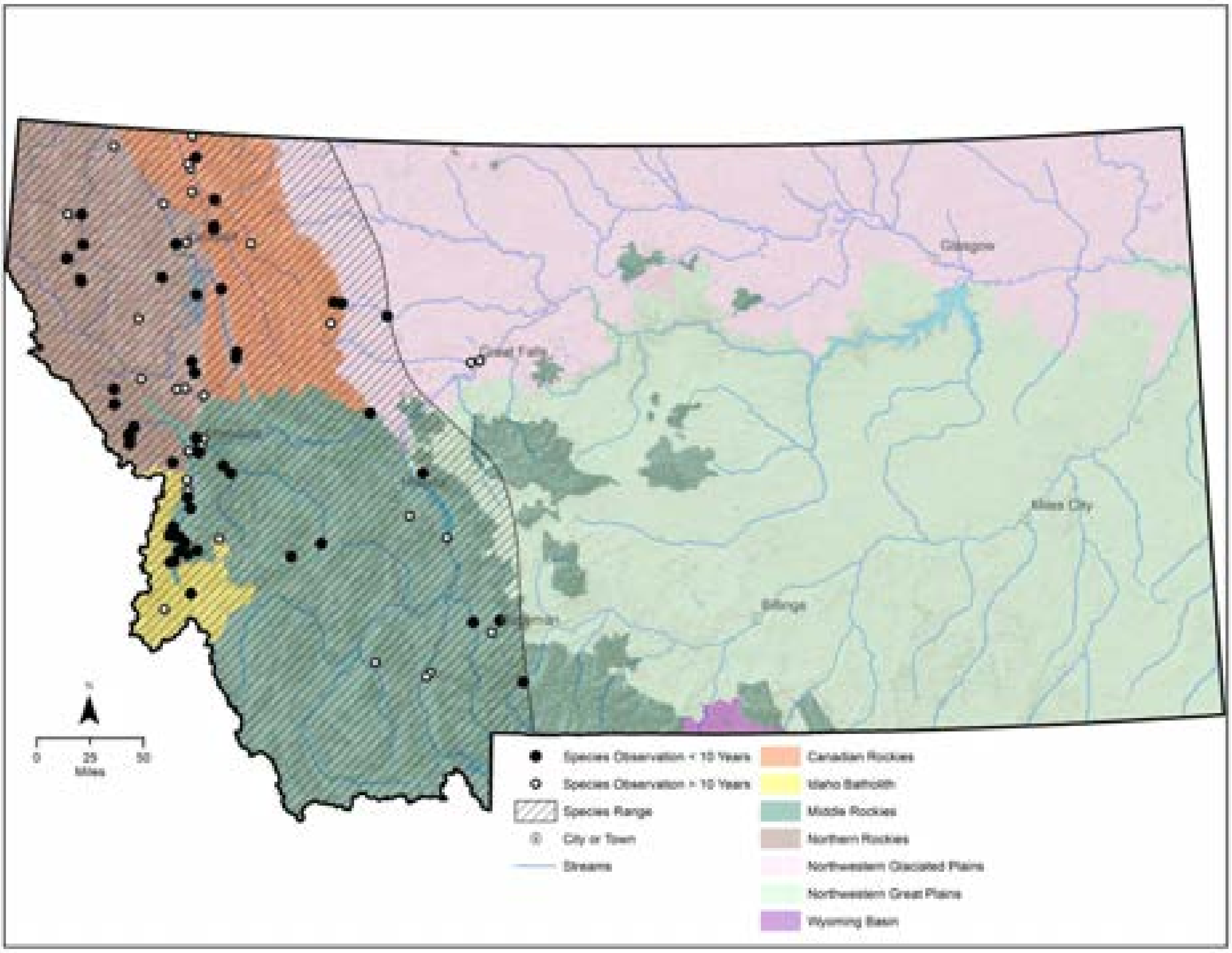

Figure 79. Montana range and observations of the western screech-owl

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>White-tailed Ptarmigan (*Lagopus leucura*)</u>

SGCN
State Rank: S3
Global Rank: G5

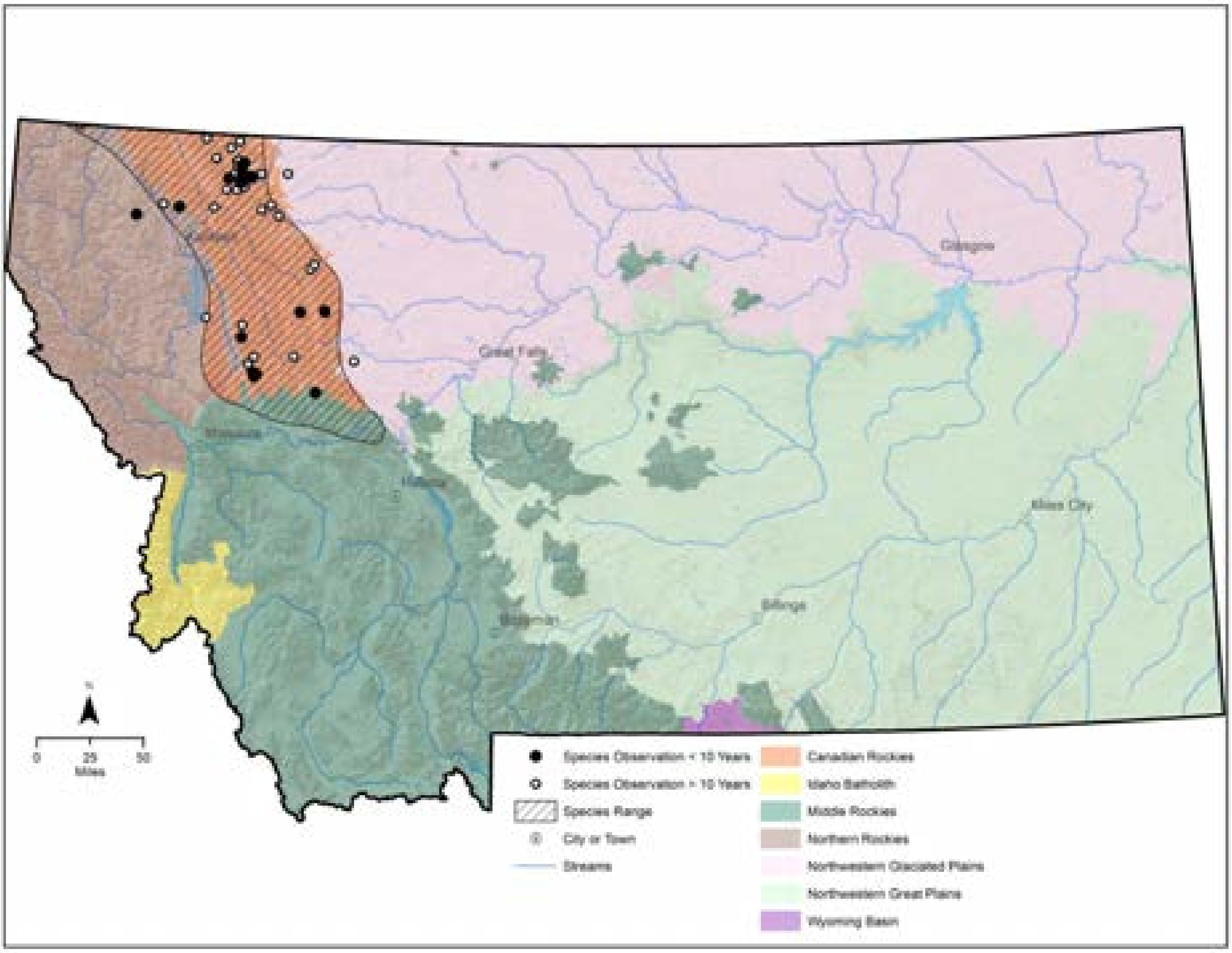

Figure 80. Montana range and observations of the white-tailed ptarmigan

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Yellow-billed Cuckoo (*Coccyzus americanus*)</u> **SGCN**

State Rank: S3B

Global Rank: G5

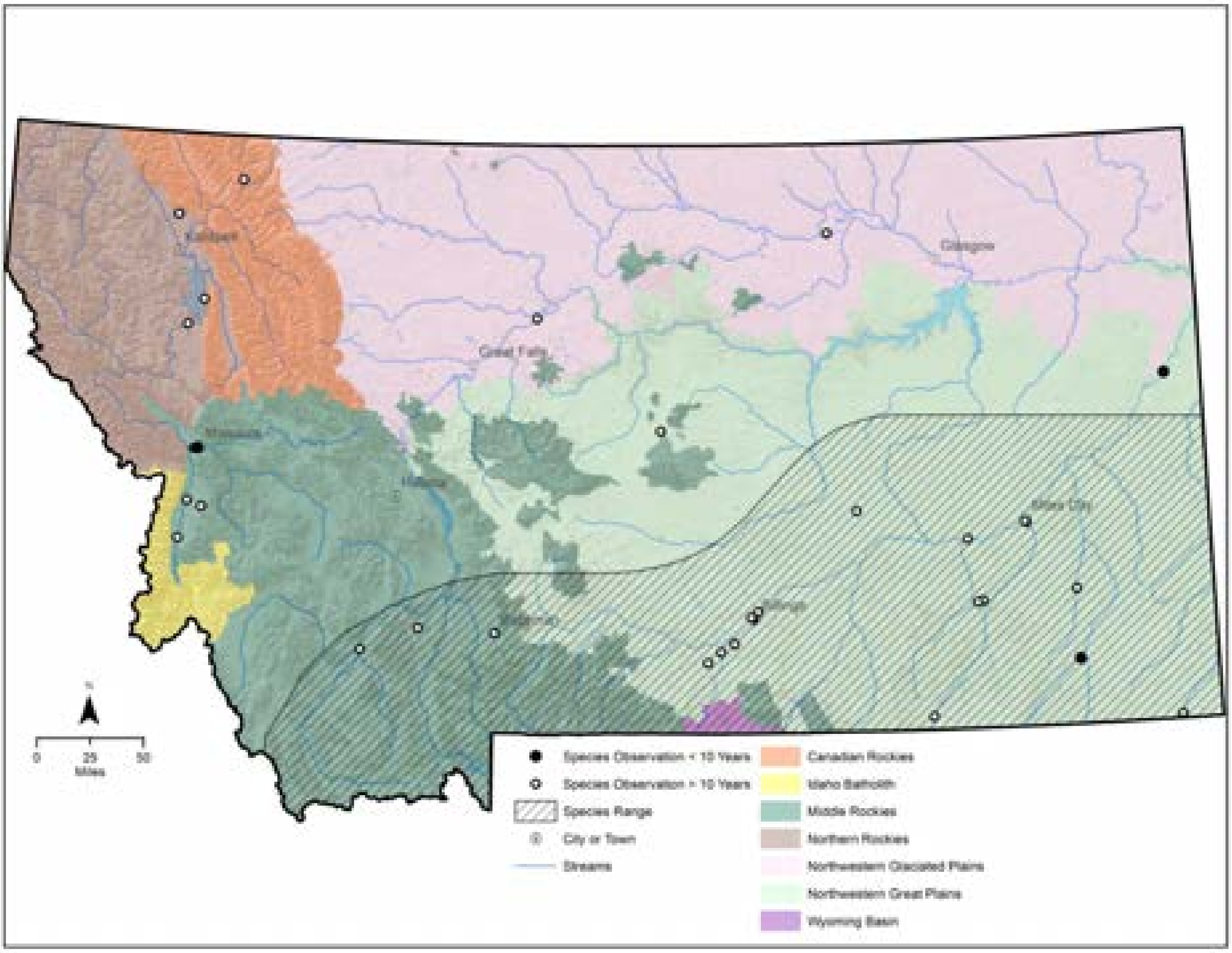

Figure 81. Montana range and observations of the yellow-billed cuckoo

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

The following bird SGIN are also SGCN. Information on these species can be found in the previous section, Species of Greatest Conservation Need.

<u>Black Rosy-Finch (*Leucosticte atrata*)</u> **SGCN**

This species has an <u>outdated survey</u> and needs to be targeted for survey and inventory. For more information, see Black Rosy-Finch under Species of Greatest Conservation Need in the previous section.

<u>Black Swift (*Cypseloides niger*)</u> **SGCN**

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory. For more information, see Black Swift under Species of Greatest Conservation Need in the previous section.

Gray-crowned Rosy-Finch (*Leucosticte tephrocotis*) SGCN

This species lacks a baseline survey and needs to be targeted for survey and inventory. For more information, see Gray-crowned Rosy-Finch under Species of Greatest Conservation Need in the previous section.

Harlequin Duck (*Histrionicus histrionicus*) SGCN

This species has an outdated survey and needs to be targeted for survey and inventory. For more information, see Harlequin Duck under Species of Greatest Conservation Need in the previous section.

Least Tern (*Sternula antillarum*) SGCN

This species has an outdated survey and needs to be targeted for survey and inventory. For more information, see Least Tern under Species of Greatest Conservation Need in the previous section.

FISH

Deepwater Sculpin (*Myoxocephalus thompsonii*)

SGCN
State Rank: S3
Global Rank: G5

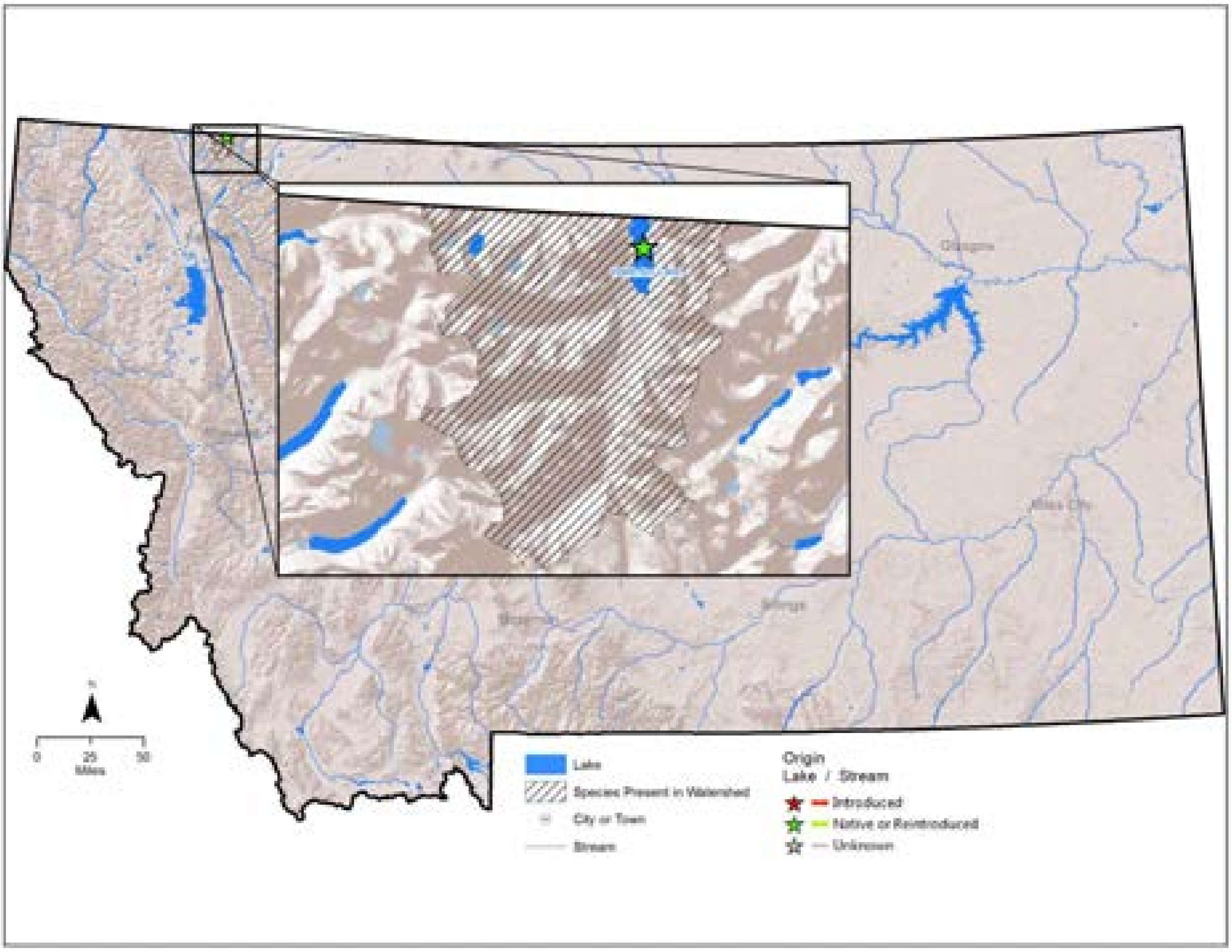

Figure 82. Montana range and observations of the deepwater sculpin

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Pygmy Whitefish (*Prosopium coulteri*)</u>

SGCN
State Rank: S3
Global Rank: G5

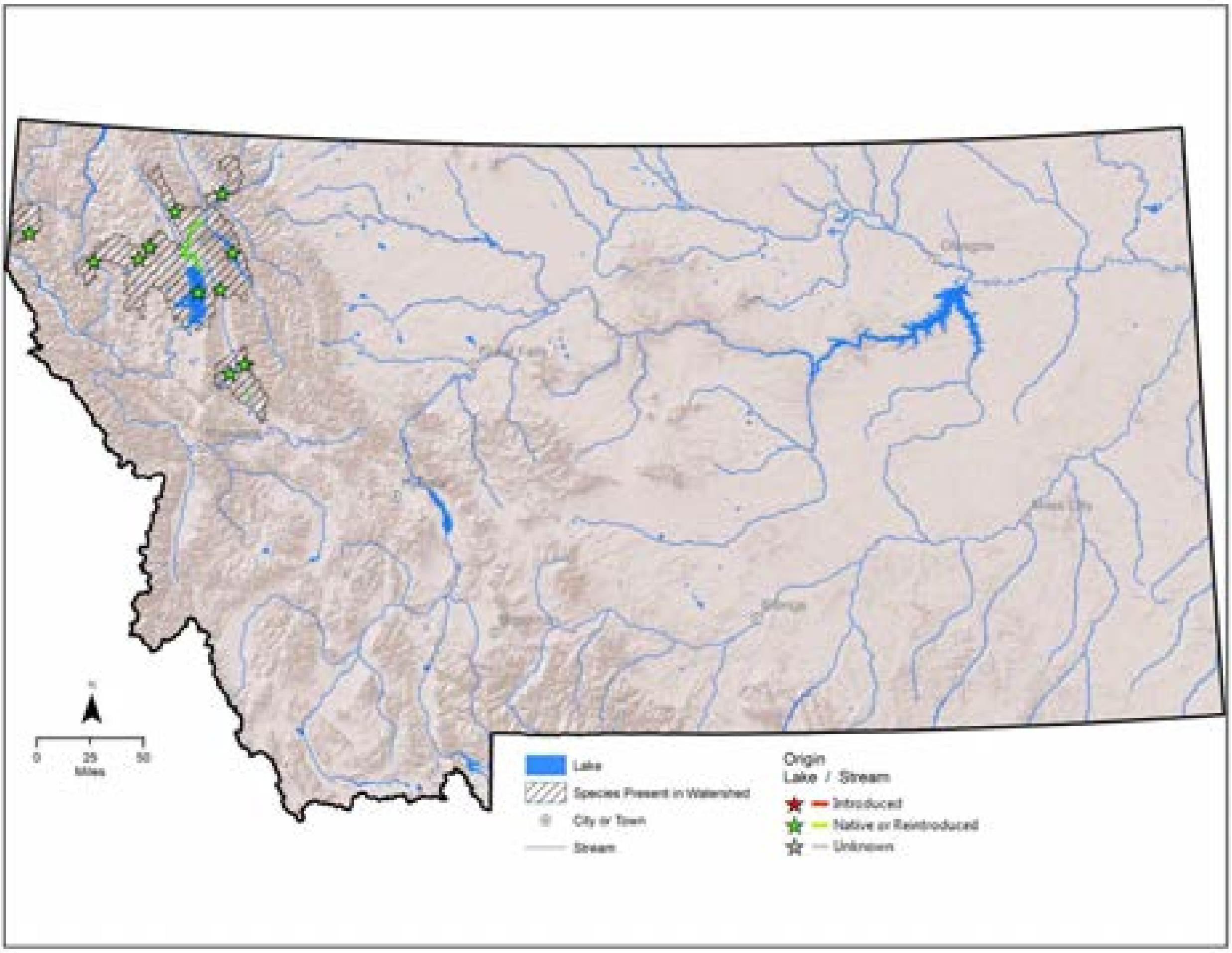

Figure 83. Montana range and observations of the pygmy whitefish

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

The following fish SGIN is also an SGCN. Information on this species can be found in the previous section, Species of Greatest Conservation Need.

<u>Trout-perch (*Percopsis omiscomaycus*)</u> **SGCN**

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory. For more information, see Trout-perch under Species of Greatest Conservation Need in the previous section.

Mammals

Black-tailed Jack Rabbit (*Lepus californicus*) PSOC

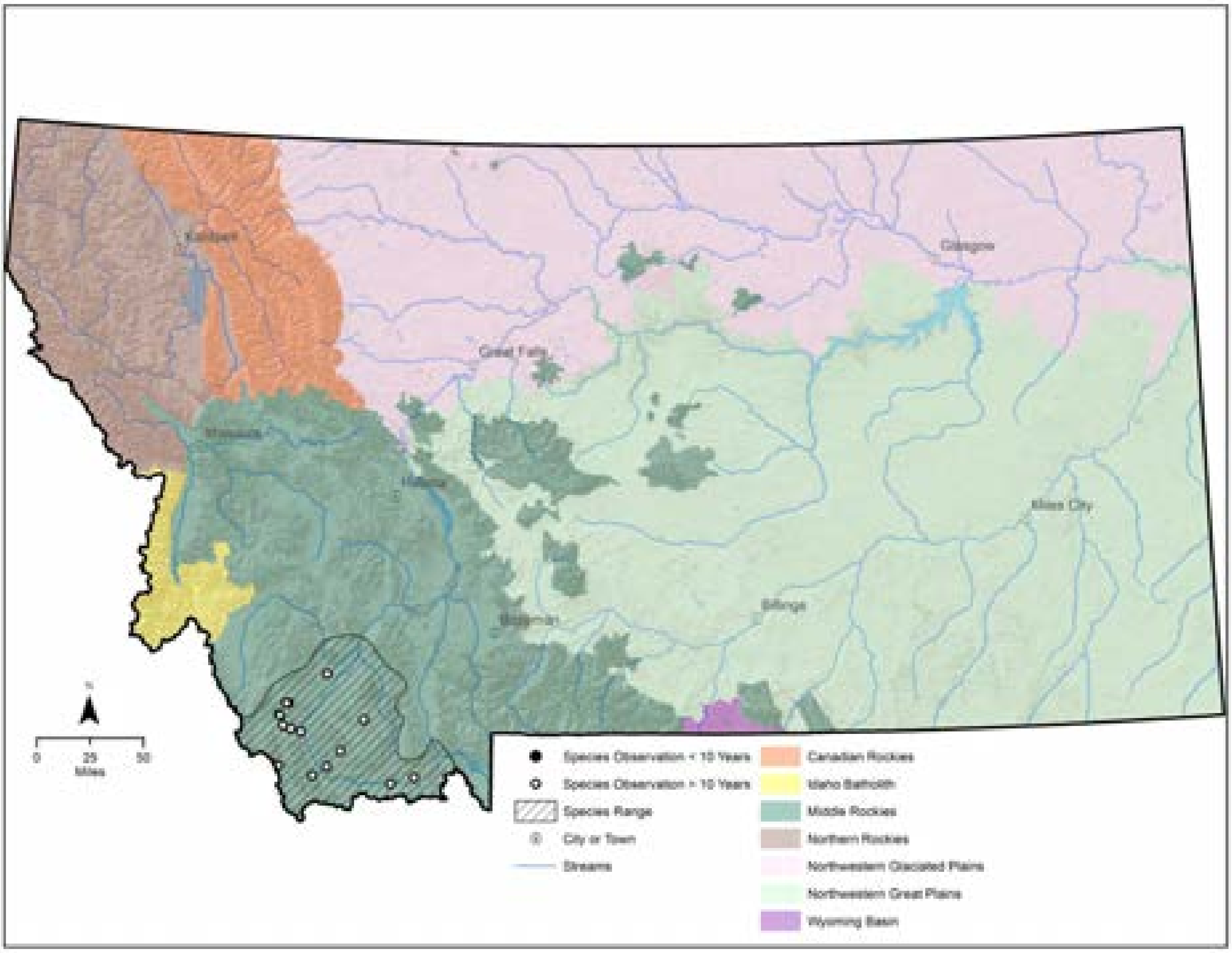

Figure 84. Montana range and observations of the black-tailed jack rabbit

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Great Basin Pocket Mouse (*Perognathus parvus*)</u>

SGCN
State Rank: S3
Global Rank: G5

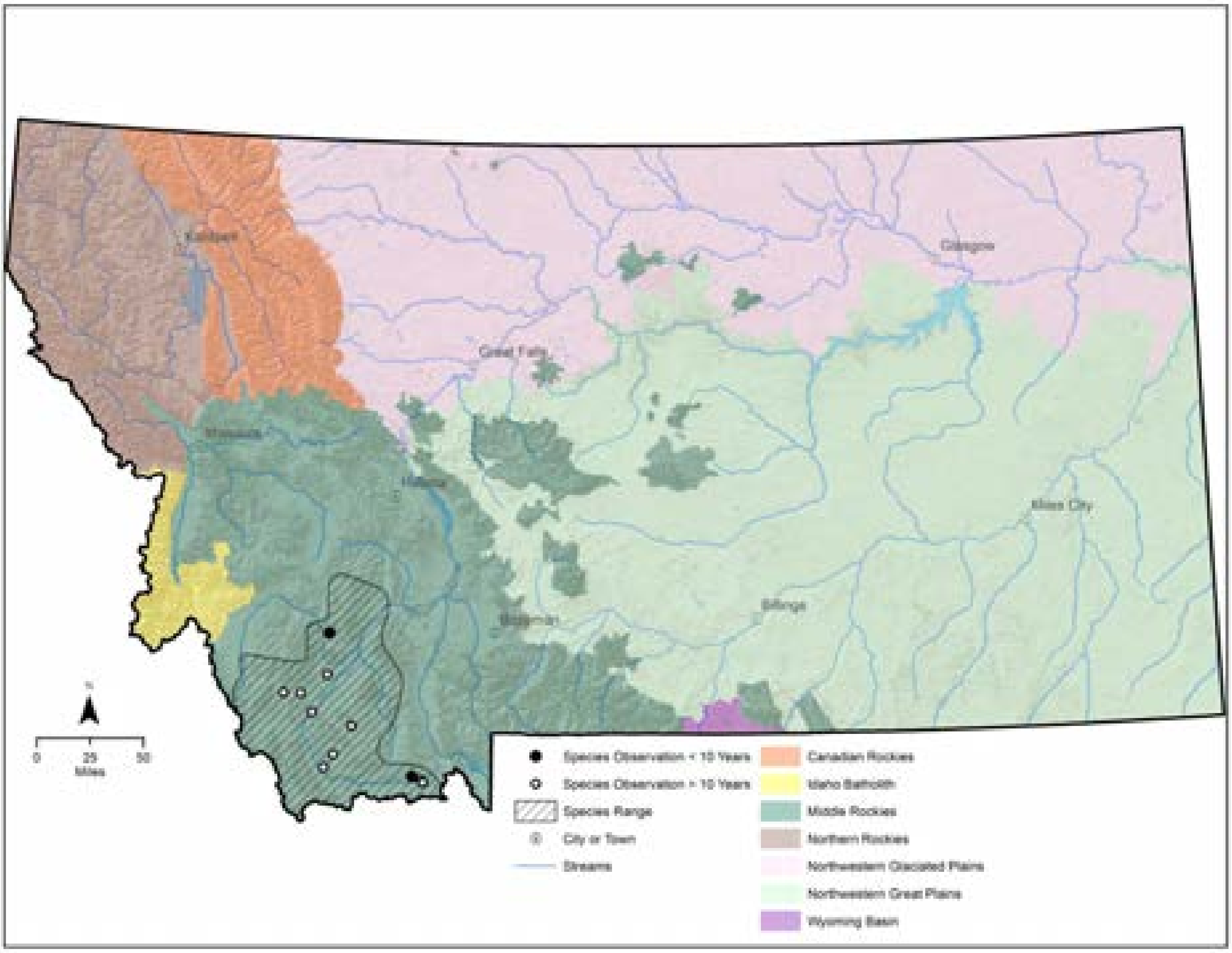

Figure 85. Montana range and observations of the Great Basin pocket mouse

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Hispid Pocket Mouse (*Chaetodipus hispidus*)</u> **PSOC**

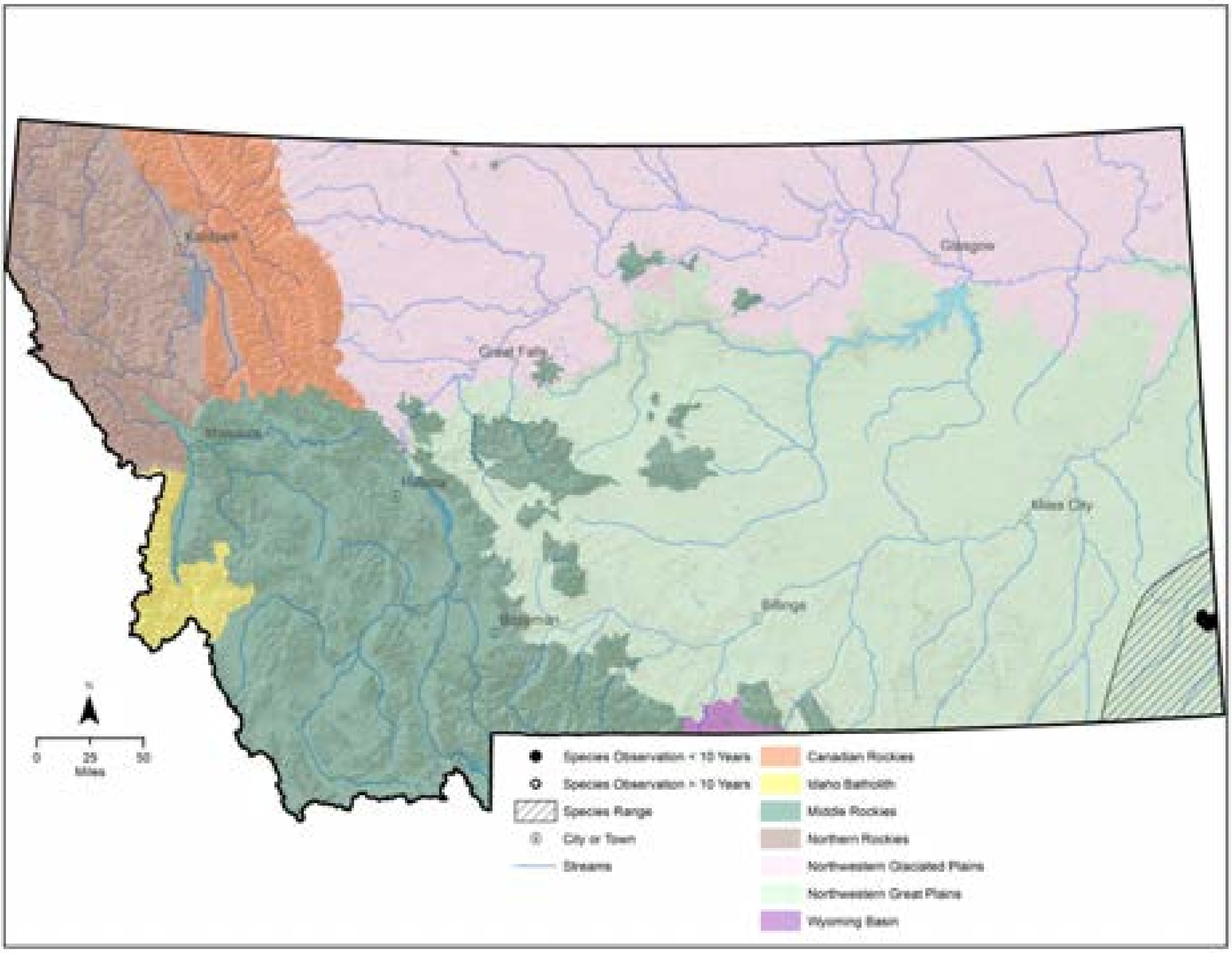

Figure 86. Montana range and observations of the hispid pocket mouse

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Hoary Marmot (*Marmota caligata*)</u> **PSOC**

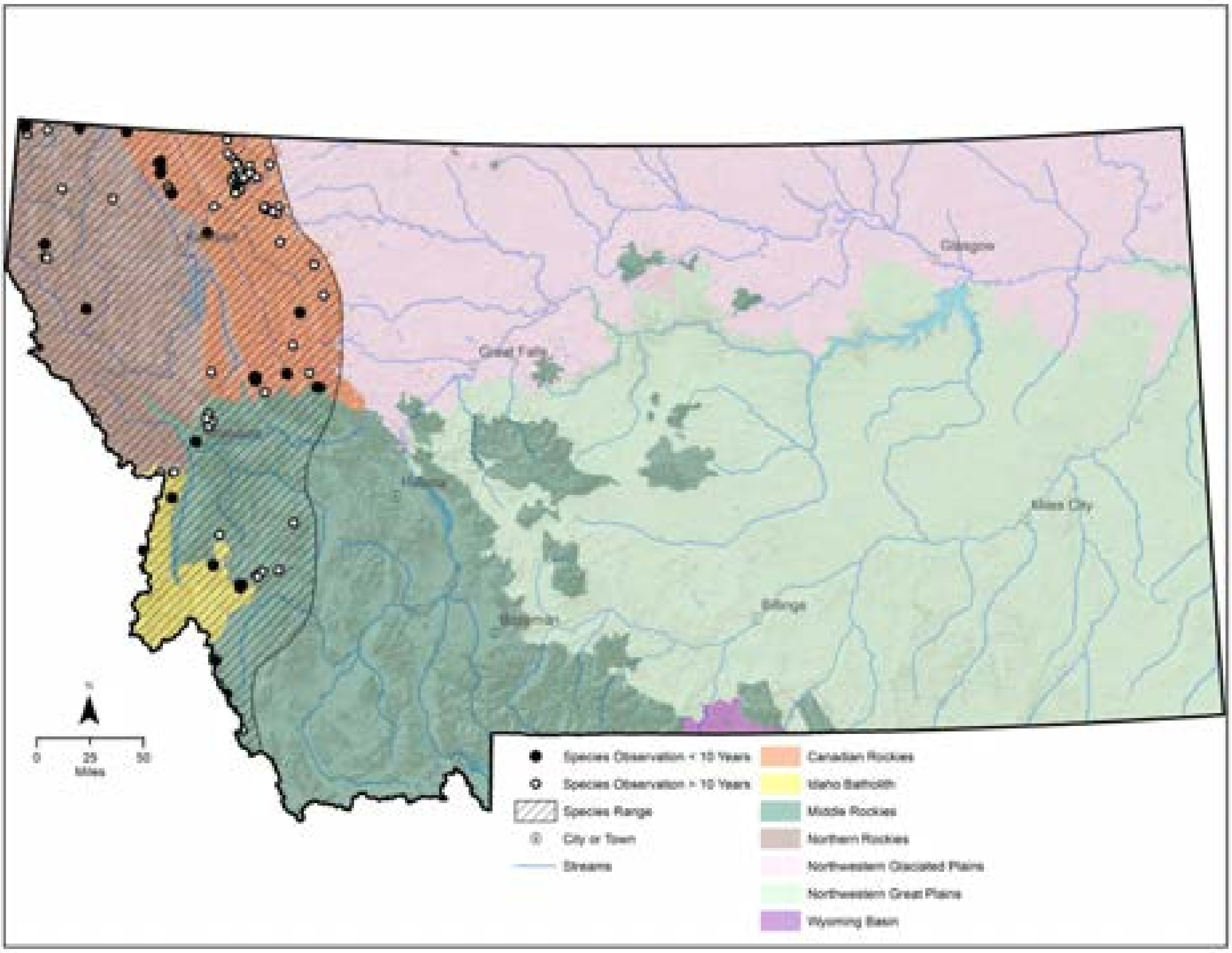

Figure 87. Montana range and observations of the hoary marmot

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Idaho Pocket Gopher (*Thomomys idahoensis*)</u> **PSOC**

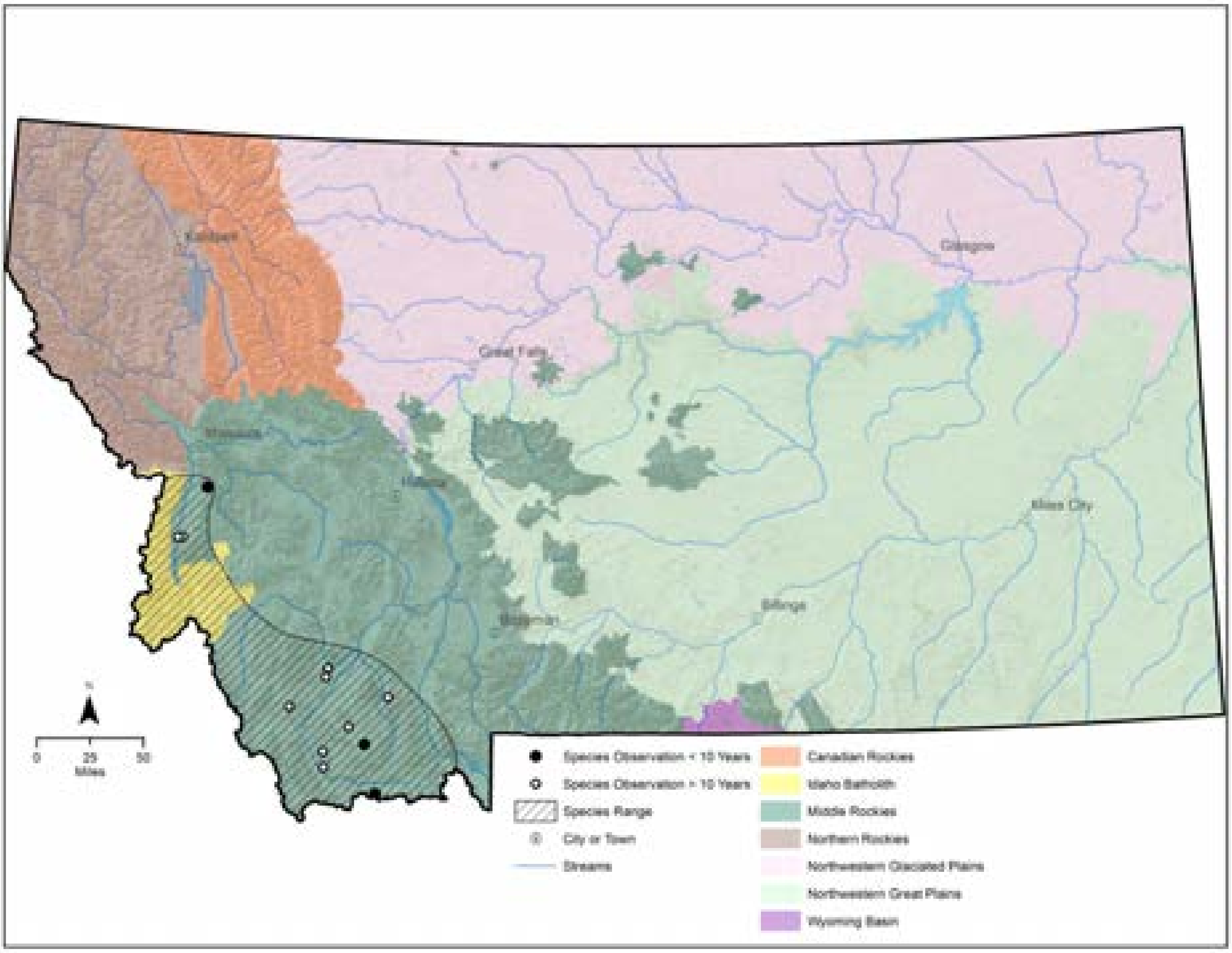

Figure 88. Montana range and observations of the Idaho pocket gopher

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Meadow Jumping Mouse (*Zapus hudsonius*) **PSOC**

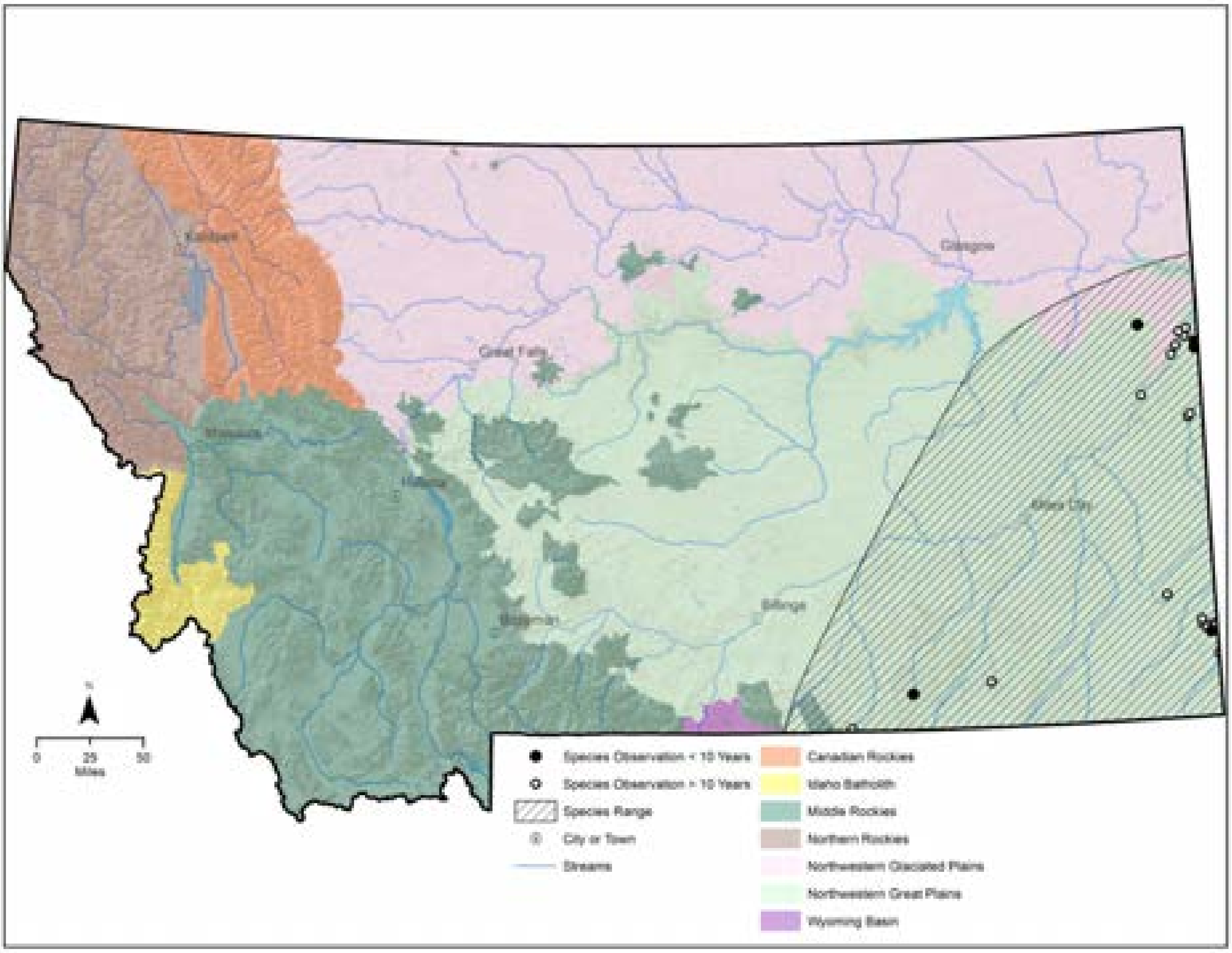

Figure 89. Montana range and observations of the meadow jumping mouse

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Porcupine (*Erethizon dorsatum*)</u> **PSOC**

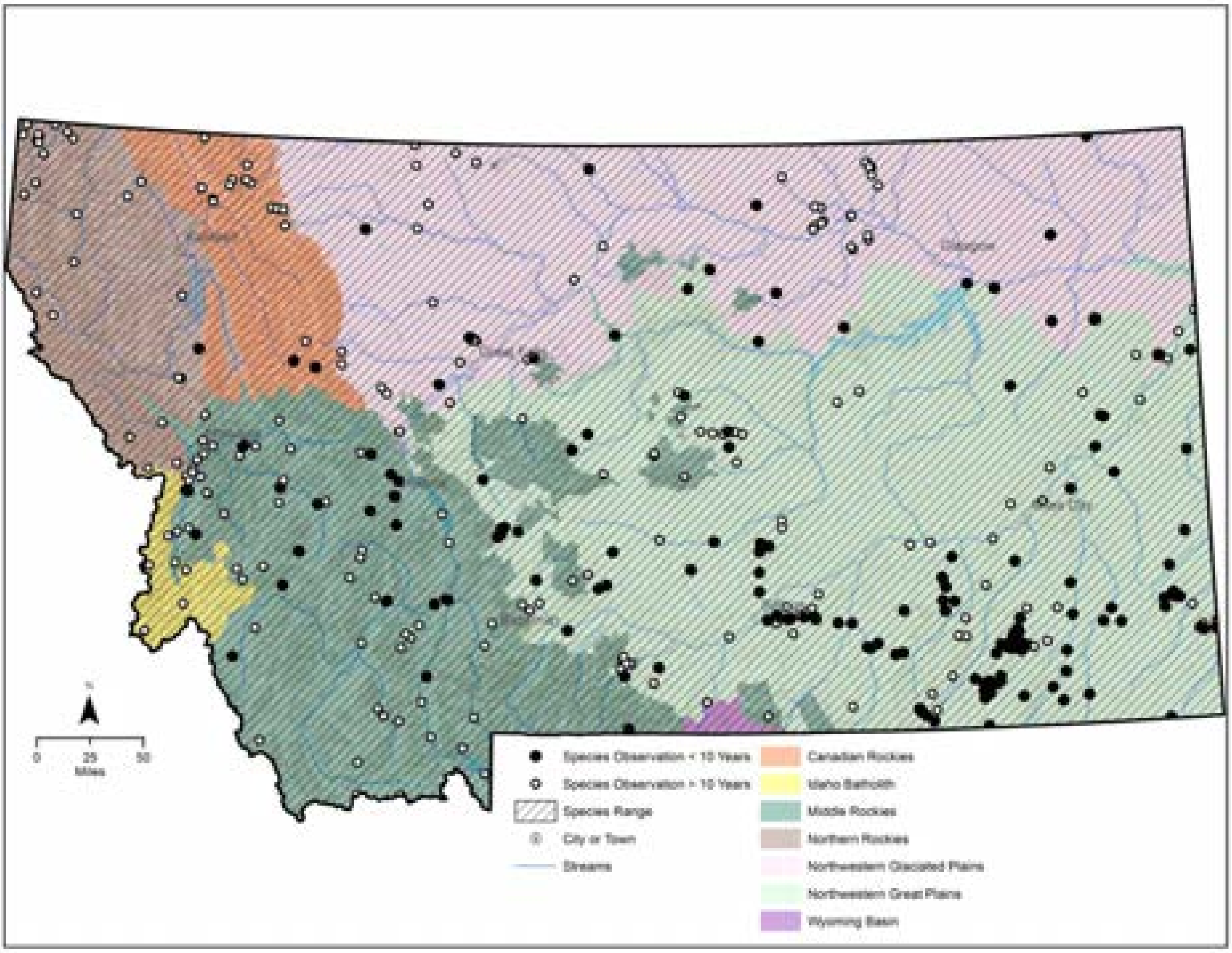

Figure 90. Montana range and observations of the porcupine

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Spotted Bat (*Euderma maculatum*) **SGCN**
State Rank: S3
Global Rank: G4

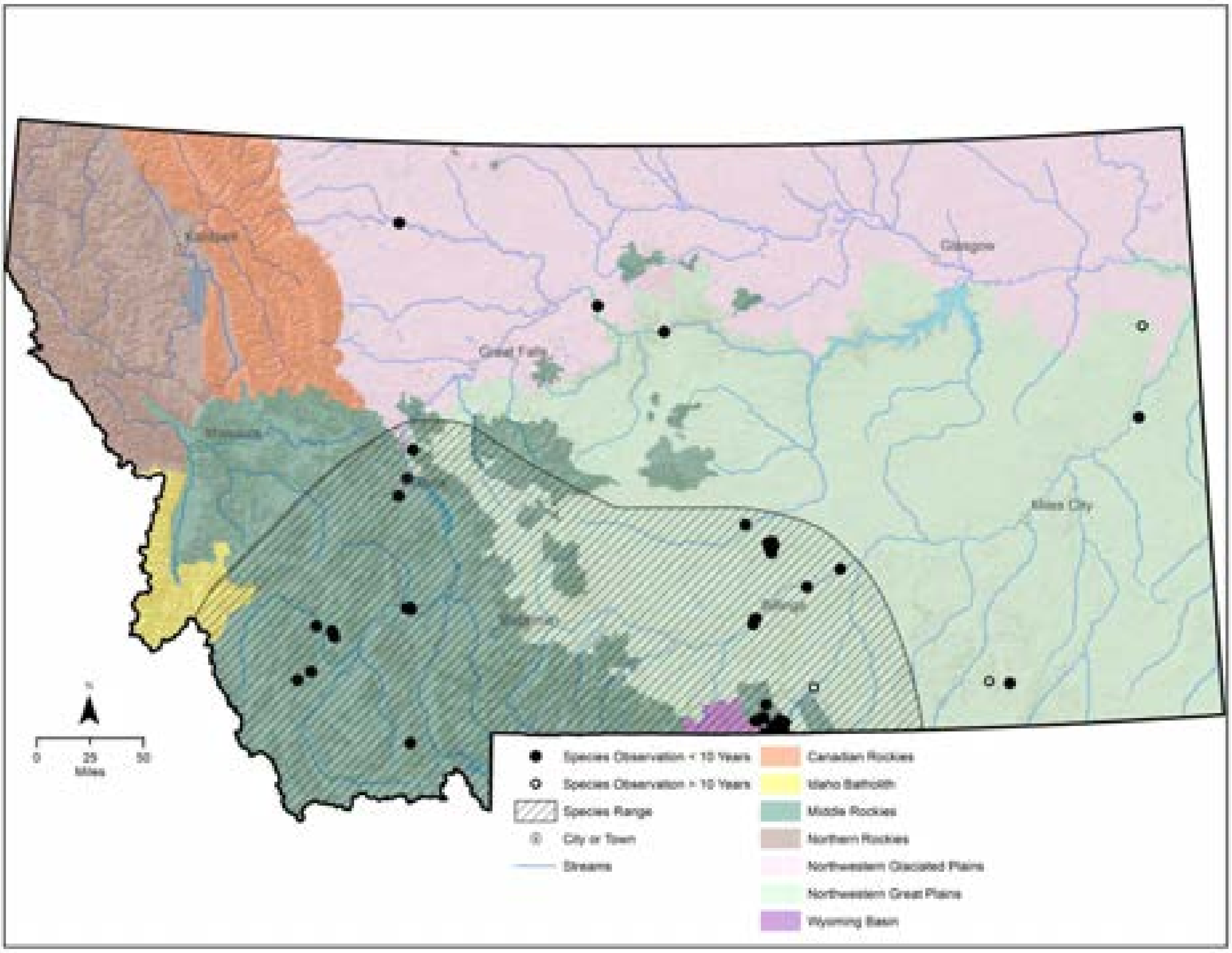

Figure 91. Montana range and observations of the spotted bat

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Uinta Chipmunk (*Tamias umbrinus*)</u> **PSOC**

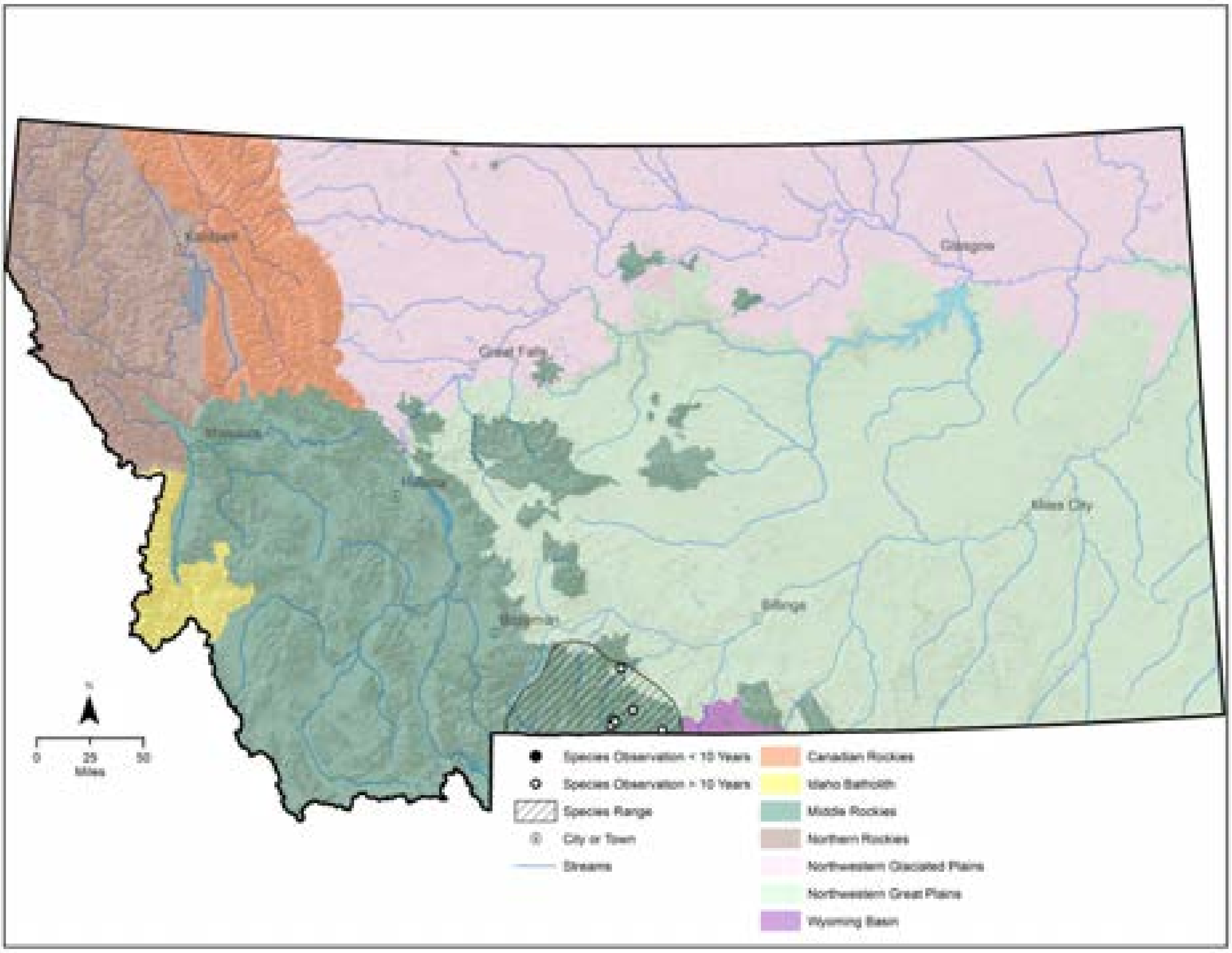

Figure 92. Montana range and observations of the Uinta chipmunk

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Uinta Ground Squirrel (*Urocitellus armatus*)</u> **PSOC**

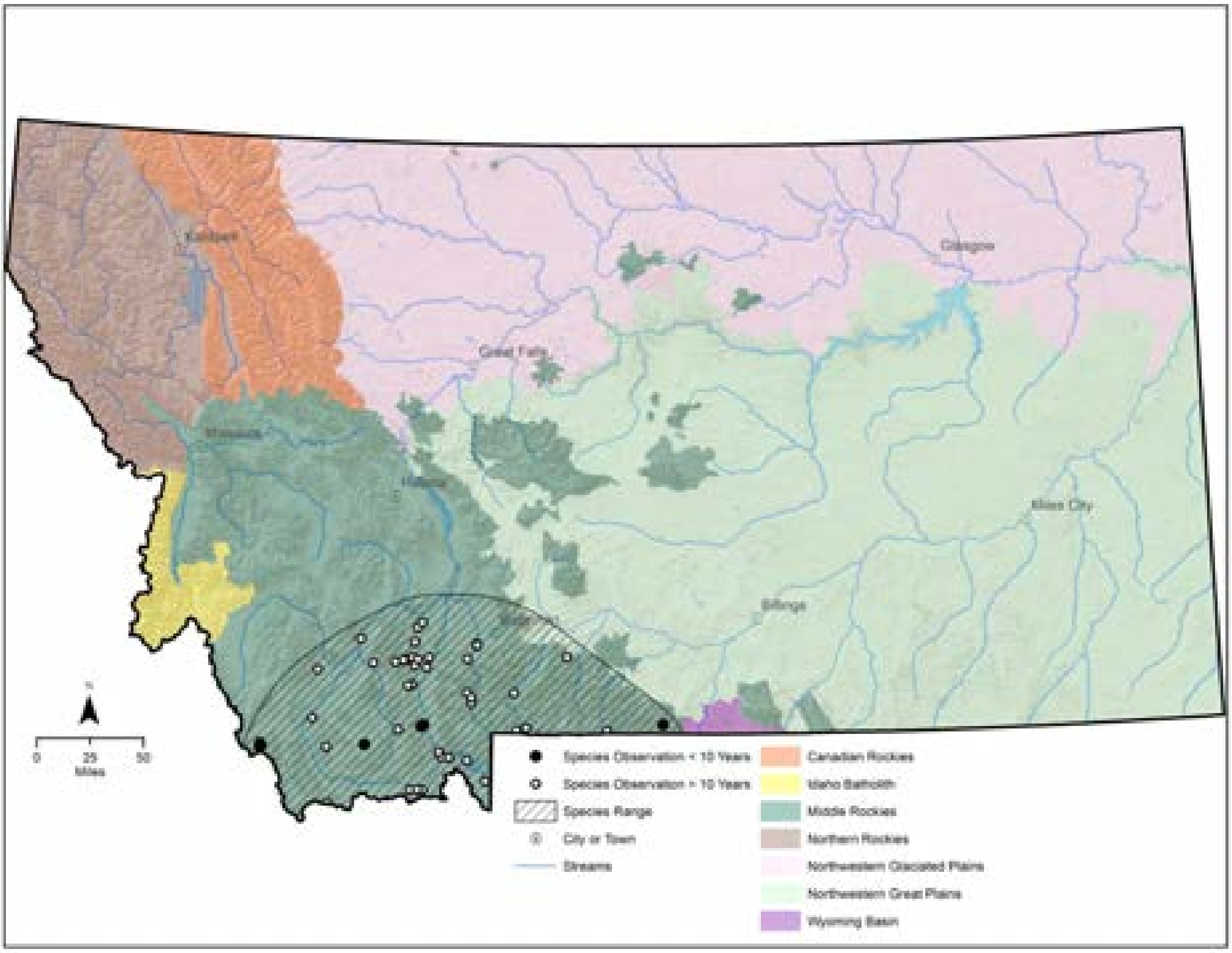

Figure 93. Montana range and observations of the Uinta ground squirrel

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

Western Spotted Skunk (*Spilogale gracilis*) **PSOC**

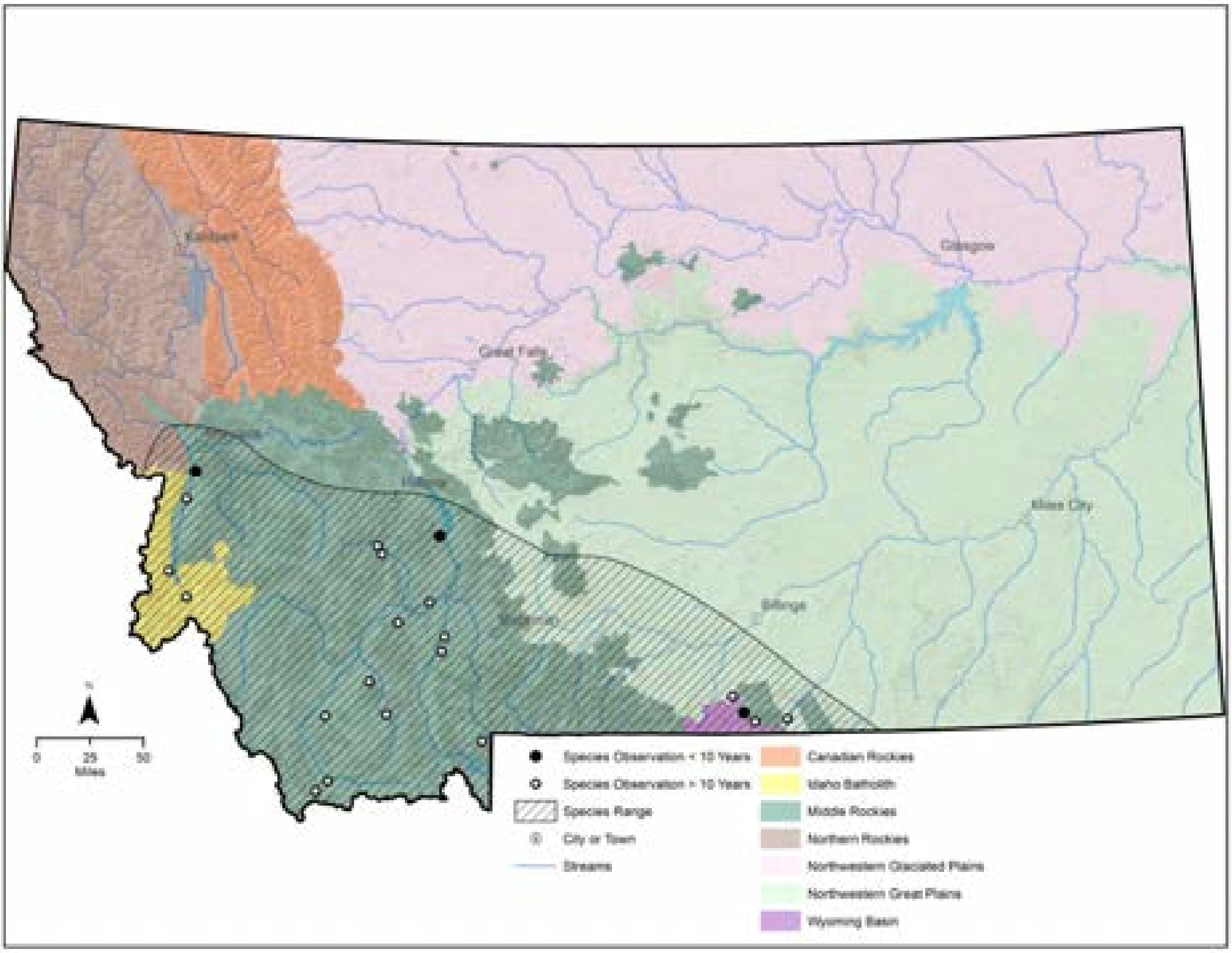

Figure 94. Montana range and observations of the western spotted skunk

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Yuma Myotis (*Myotis yumanensis*)</u> **PSOC**

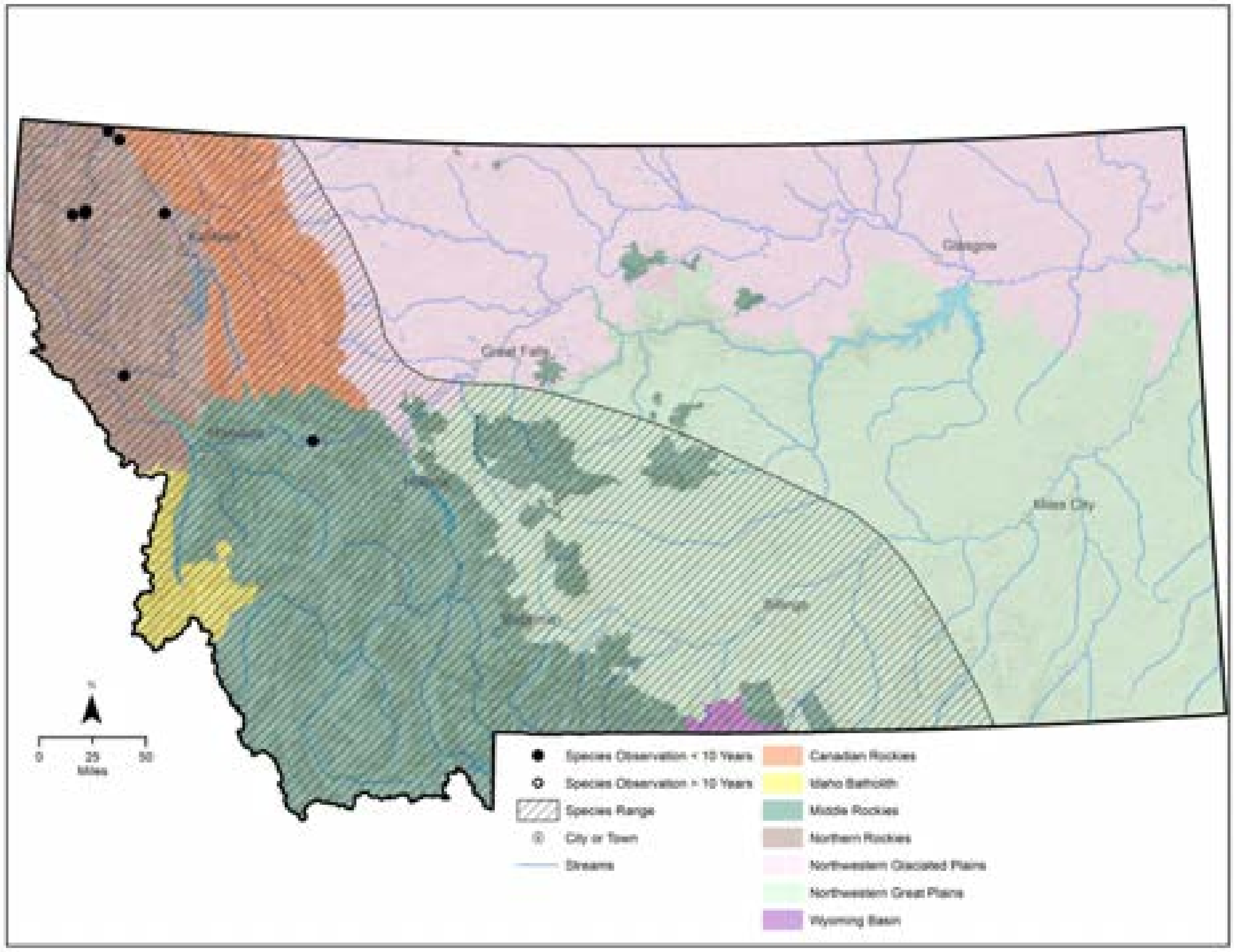

Figure 95. Montana range and observations of the Yuma myotis

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

The following mammal SGIN is also an SGCN. Information on this species can be found in the previous section, Species of Greatest Conservation Need.

<u>Northern Bog Lemming (*Synaptomys borealis*)</u> **SGCN**

This species has an <u>outdated survey</u> and needs to be targeted for survey and inventory. For more information, see Northern Bog Lemming under Species of Greatest Conservation Need in the previous section.

REPTILES

Greater Short-horned Lizard (*Phrynosoma hernandesi*)

SGCN
State Rank: S3
Global Rank: G5

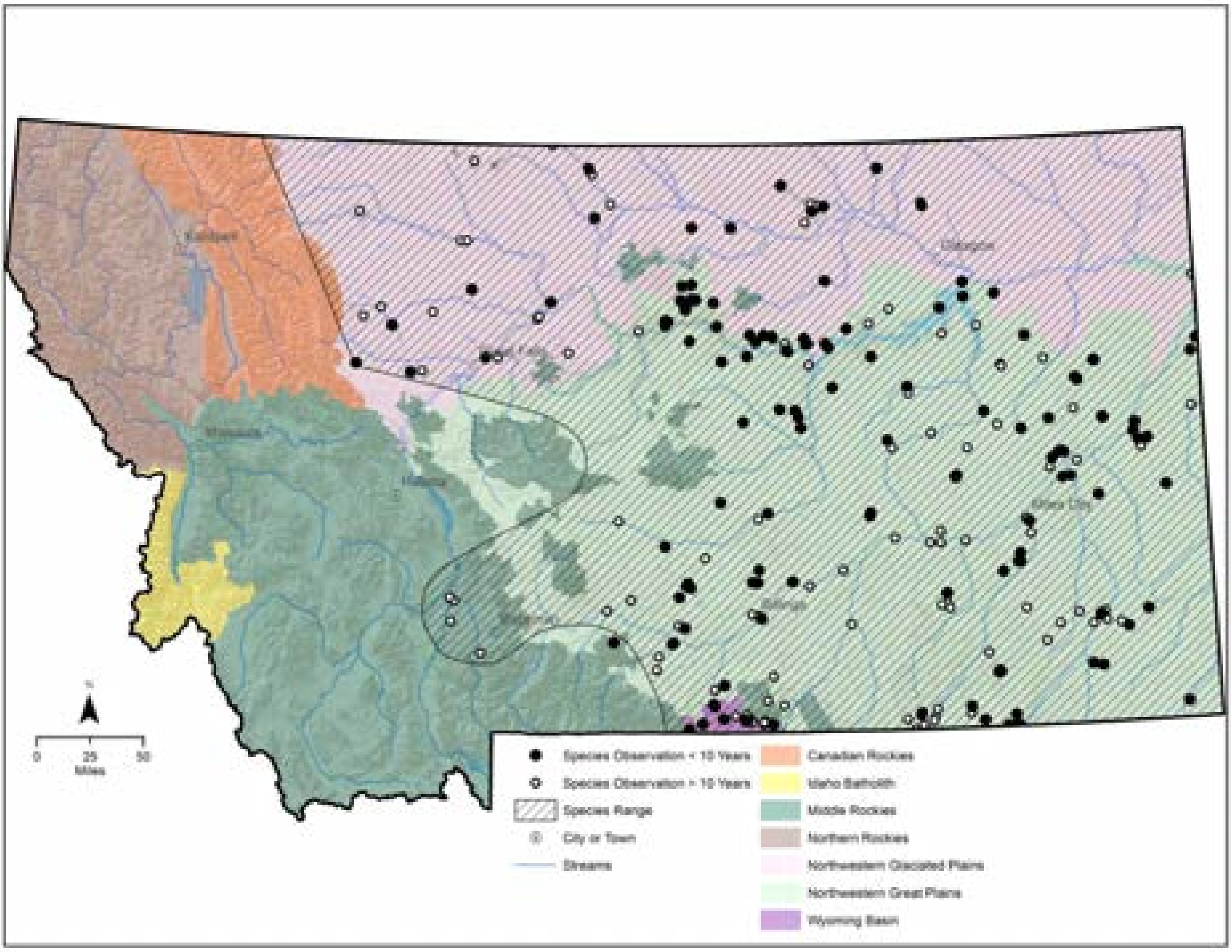

Figure 96. Montana range and observations of the greater short-horned lizard

This species lacks a baseline survey and needs to be targeted for survey and inventory.

<u>Northern Alligator Lizard (*Elgaria coerulea*)</u>

SGCN
State Rank: S3
Global Rank: G5

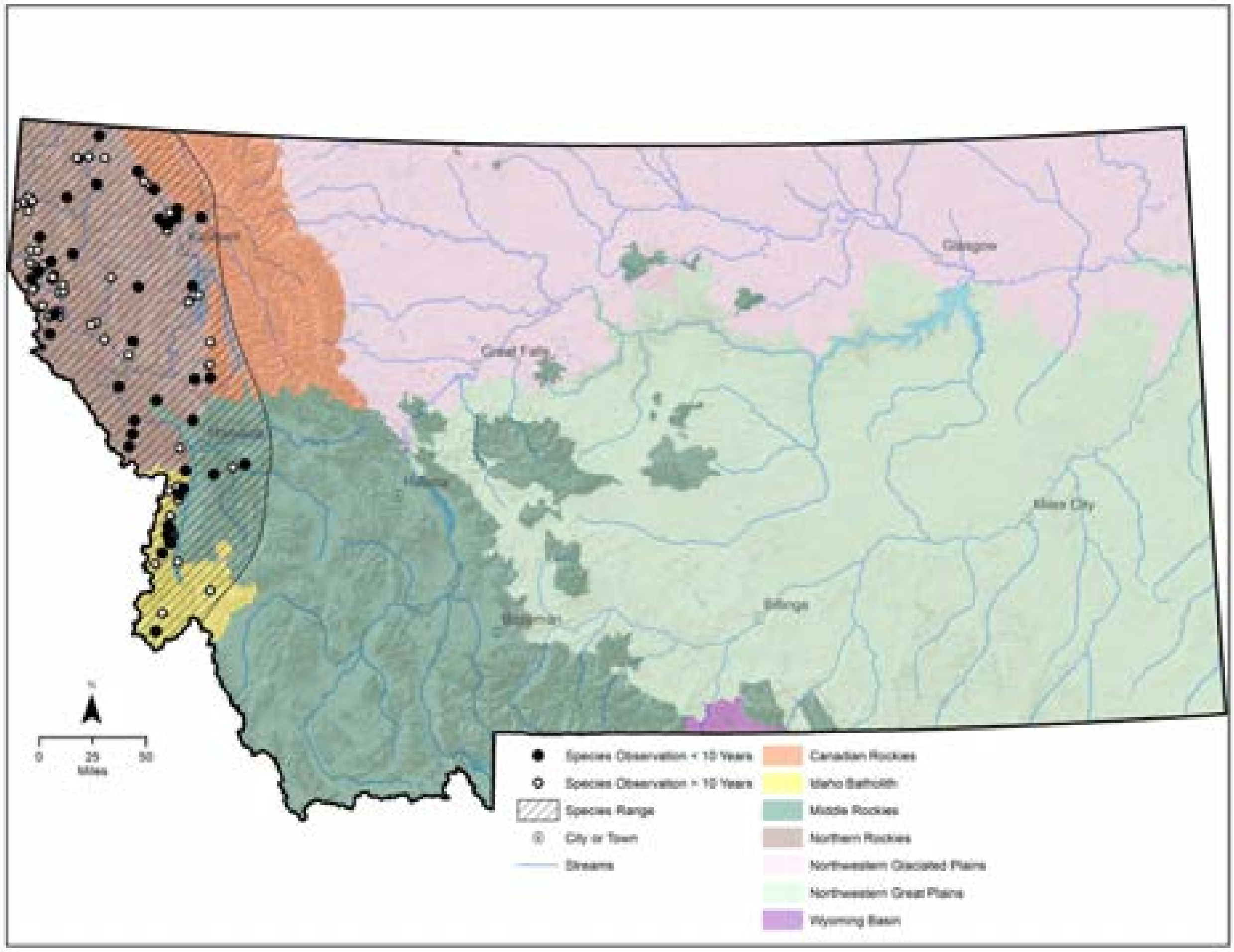

Figure 97. Montana range and observations of the northern alligator lizard

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Pygmy Short-horned Lizard (*Phrynosoma douglasii*)</u>

PSOC

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory. There is no range map for this species in Montana.

<u>Snapping Turtle (*Chelydra serpentina*)</u>

SGCN
State Rank: S3
Global Rank: G5

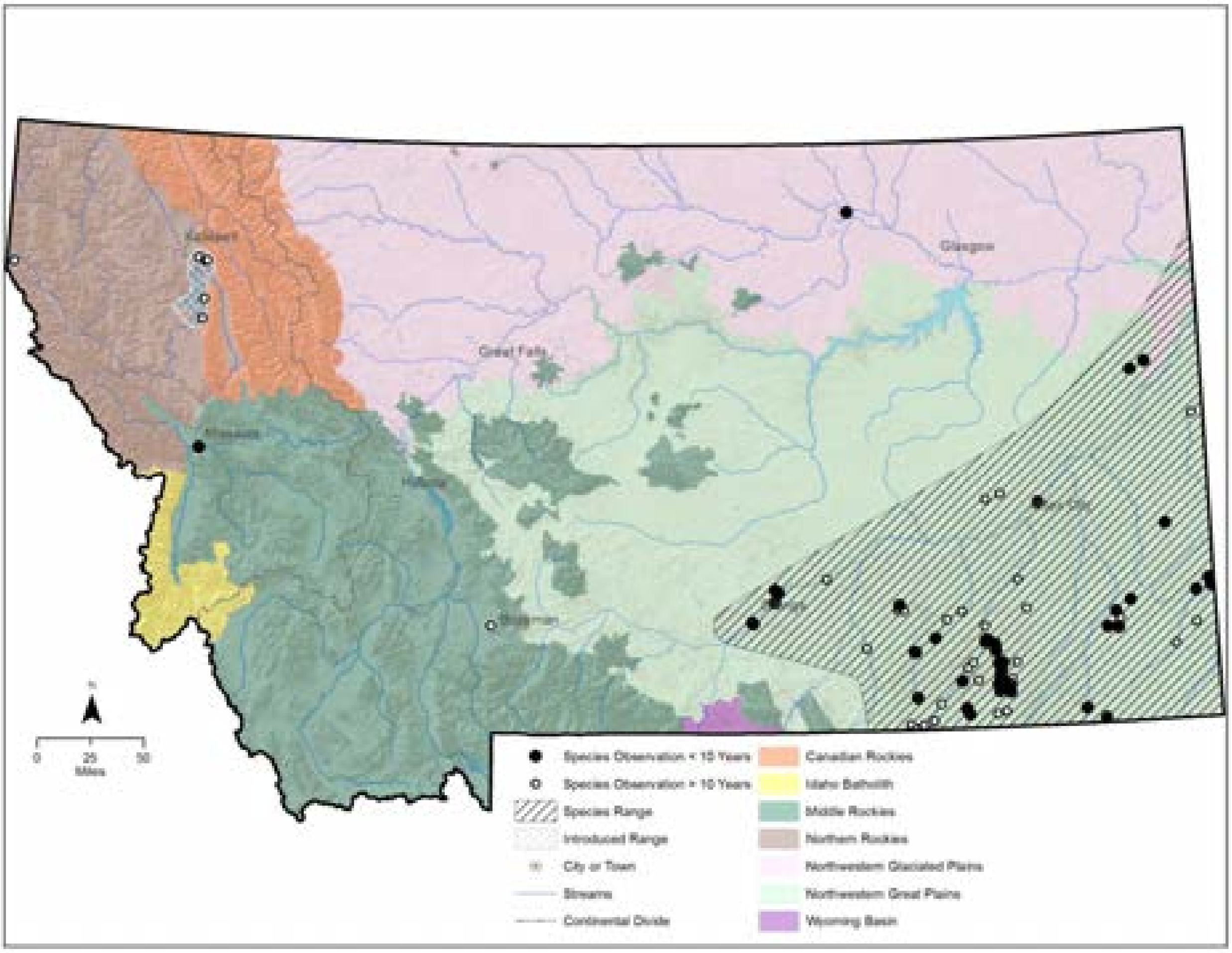

Figure 98. Montana range and observations of the snapping turtle

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

<u>Western Skink (*Plestiodon skiltonianus*)</u> **SGCN**
State Rank: S3
Global Rank: G5

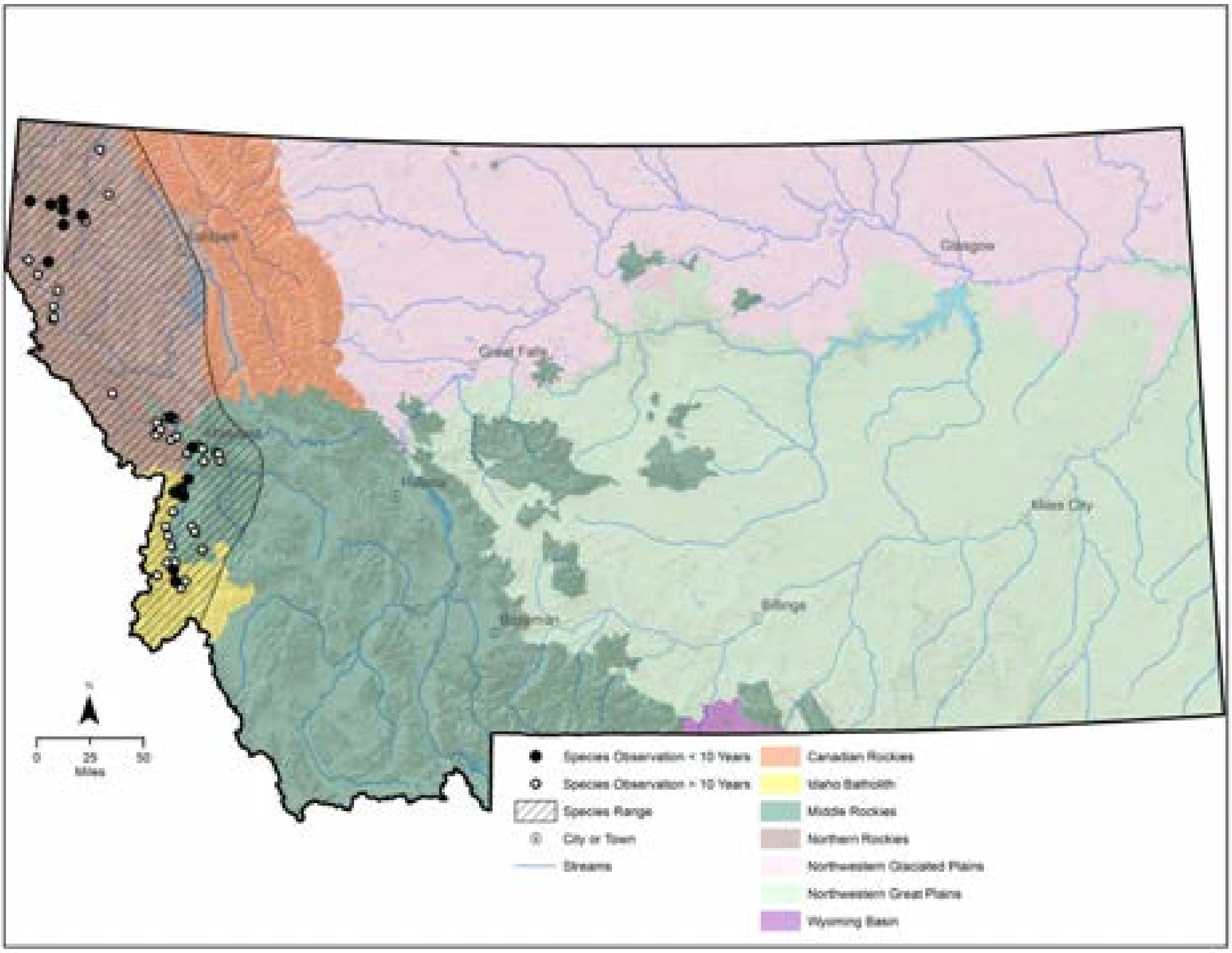

Figure 99. Montana range and observations of the western skink

This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory.

The following reptile SGIN are also SGCN. Information on these species can be found in the previous section, Species of Greatest Conservation Need.

<u>Smooth Greensnake (*Opheodrys vernalis*)</u> **SGCN**
This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory. For more information, see Smooth Greensnake under Species of Greatest Conservation Need in the previous section.

<u>Western Hog-nosed Snake (*Heterodon nasicus*)</u> **SGCN**
This species <u>lacks a baseline survey</u> and needs to be targeted for survey and inventory. For more information, see Western Hog-nosed Snake under Species of Greatest Conservation Need in the previous section.

MONITORING AND ADAPTIVE MANAGEMENT

Individual states are challenged with the difficult task to evaluate and then communicate the effectiveness of their SWAP and the SWG program. The intricate nature of ecological interactions is compounded by the fact that a decade may pass before any changes are observed. Despite these difficulties, Congress and the Office of Management and Budget have required the states to provide results that demonstrate good use of the SWG funds allocated.

To address this, AFWA formed the Effectiveness Measures Working Group in 2009 to develop and test a framework and effectiveness measures for the SWG program (AFWA 2011). This group provided states the guidance they needed through a final report, *Measuring the Effectiveness of State Wildlife Grants: Final Report* (AFWA 2011). Using the AFWA effectiveness framework will help Montana improve conservation work through adaptive management and demonstrate to policy makers that SWG is a good investment.

While the Effectiveness Measures Working Group was developing this framework, the USFWS was developing a new data tracking and reporting system for SWG. This system, TRACS, has incorporated the effectiveness measures framework and is expected to help all states demonstrate the value of SWG and SWAP by using consistent language to describe project achievements when reporting to Congress, the Office of Management and Budget, and other policy makers.

While FWP will continue to track SWG funded work, there are many other FWP projects funded through other means that may address actions found in the SWAP and forthcoming Implementation Plan. SWAP actions also may be implemented by other agencies and organizations. All of these actions are difficult to quantify, but contribute to the overall objectives of the SWAP. FWP will make a concerted effort to track this SWAP's implemented actions that are external to SWG to develop a comprehensive implementation picture.

MONTANA'S APPROACH

The scope of the Montana's SWAP is tremendous and exceeds the current resources that would be necessary to fully implement all the conservation actions identified in the plan. As a result, there is a great need to prioritize projects, monitor the effectiveness of the SWAP actions implemented, and change the focus, objectives, and goals as needed.

Components of Montana's SWAP, its forthcoming Implementation Plan, and individual projects will be reviewed at set intervals to help determine the effectiveness of the implemented conservation actions.

- State Wildlife Action Plan – 10 years
  - Species of Greatest Conservation Need – annually
  - Species of Greatest Inventory Need – annually
- Implementation Plan – 3-5 years
- Individual projects – annually and at project end

FWP will be using the generic actions identified on pages 28-30 in AFWA's *Measuring the Effectiveness of State Wildlife Grants: Final Report* (2011) to maintain common language and to make tracking of implemented actions easier. FWP encourages other partner agencies and organizations to do the same to measure the effectiveness of all conservation actions and to make reporting on these actions more understandable.

These generic actions will be used in conjunction with TRACS to monitor all of the implemented SWAP conservation actions. This will allow Montana to report consistently with the other states to Congress, the Office of Management and Budget, and others, to help justify SWG funding.

Ultimately, the final test to show if conservation actions are working as intended, is the SGCN list. Changes in State Rank will serve as one indicator to help gauge if species are being successfully conserved in Montana. Overall, the movement of any species from a higher State Rank to a lower State Rank, or off the list entirely could indicate improvement. In some instances, SWAP actions may prevent the need to move a species to a higher (i.e., more at risk) rank. Movement to a higher rank may advocate for adjusting actions to better manage the species or its associated community type(s).

This SWAP SGCN list will be revised based on changes to the SOC list. These changes will be submitted to the USFWS no more than once annually for their review and approval.

The forthcoming Implementation Plan will detail monitoring methodologies for the specific priorities and work focuses identified within the Implementation Plan.

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APPENDICES

Appendix A: Frequently Used Acronyms Found in the SWAP

AFS: American Fisheries Society

AFWA: Association of Fish and Wildlife Agencies

ATT: Aquatic Technical Team

BLM: Bureau of Land Management

BMP: Best Management Practice

BOR: Bureau of Reclamation

CAPS: Crucial Areas Planning System

CCAA: Candidate Conservation Agreement with Assurances

CFWCS: Comprehensive Fish and Wildlife Conservation Strategy

CRP: Conservation Reserve Program

CTGCN: Community Types of Greatest Conservation Need

DNRC: Department of Natural Resources and Conservation

ESA: Endangered Species Act

FAS: Fishing Access Sites

FWP: Montana Fish, Wildlife & Parks

IBA: Important Bird Areas

MNHP: Montana Natural Heritage Program

MPPRC: Montana Piping Plover Recovery Committee

NRCS: Natural Resources Conservation Service

ORV: Off-road Vehicle

PSOC: Potential Species of Concern

RMP:	Range Management Plans
SGCN:	Species of Greatest Conservation Need
SGIN:	Species of Greatest Inventory Need
SOC:	Species of Concern
SWAP:	State Wildlife Action Plan
SWG:	State Wildlife Grant
TRACS:	Tracking and Reporting Actions for the Conservation of Species
TTT:	Terrestrial Technical Team
USACOE:	United States Army Corps of Engineers
USFS:	United States Forest Service
USFWS:	United States Fish and Wildlife Service
WAFWA:	Western Association of Fish and Wildlife Agencies
WCT:	Westslope Cutthroat Trout
WMA:	Wildlife Management Area
WTPD:	White-tailed Prairie Dog
YCT:	Yellowstone Cutthroat Trout
YNP:	Yellowstone National Park

Appendix B: Questions asked Montana Fish, Wildlife & Parks employees via Survey Monkey prior to starting the State Wildlife Action Plan revision

COMPREHENSIVE FISH AND WILDLIFE CONSERVATION STRATEGY (CFWCS)

FWP's first CFWCS was submitted to the U.S. Fish and Wildlife Service in December 2005. All states are required to update their strategies by December 2015. FWP has committed to completing the CFWCS update by December 2012.

The following questions refer to the current strategy and the strategy update process.

13. Did you participate in the development of the CFCWS?
◯ Yes ◯ No

14. Were you satisfied with your participation in the development process?
◯ Yes ◯ Somewhat ◯ No

15. Were you satisfied with the development/planning process overall?
◯ Yes ◯ Somewhat ◯ No

The following topics are being considered for inclusion in the CFWCS update: game species, invertebrates (aquatic and terrestrial), climate change, connectivity, sensitive plant species addendum, and a wetland conservation strategy addendum.

16. Please provide your opinion about including any or all of components listed above in the CFWCS update.

17. Please describe any particular section/topic (existing or proposed) you feel should be added, removed, or elaborated on in the CFWCS update.

18. What can be done to make the final CFWCS product more user friendly?

Appendix C: List of external agencies and organizations the Coordinator met with to discuss the previous Comprehensive Fish and Wildlife Conservation Strategy prior to starting revision

Agency/Organization	Number of Staff
Montana Natural Heritage Program	3
National Park Service	1
U.S. Fish and Wildlife Service	2
U.S. Forest Service	5
American Wildlands	2
Center for Large Landscape Conservation	2
Defenders of Wildlife	3
Intermountain Joint Venture	1
Montana Audubon	1
National Wildlife Federation	2
The Nature Conservancy	1
The Wilderness Society	3
Wildlife Conservation Society	2

Appendix D: State Wildlife Action Plan Revision Guidance Document, 27 March 2012

FINAL PROBLEM STATEMENT

FWP must revise the SWAP in a way that 1) guides decision making and prioritizes species and community types of greatest conservation need, 2) identifies and prioritizes threats to species and community types, 3) implements monitoring, inventory, and conservation of species, community types, and habitat, 4) incorporates effectiveness measures, 5) maximizes funding opportunities and partnerships, and 6) meets the Federal requirements (8 elements).

OBJECTIVES

Fundamental

The focus of the SWAP must be clearly understood and accepted.

The focus of the SWAP is community types and species of concern.

The SWAP should consider all fish and wildlife species' needs to prioritize habitat and Community Types of Greatest Conservation Need (CTGCN).

It must be clear how the SWAP fits into the overall department strategic plan.

- There must be integration with existing plans.

SWAP buy-in within FWP and external to FWP must be maximized.

- Maximize relevancy

The SWAP must deliver effective, strategic conservation.

- The SWAP must be usable for agency prioritization.
- The SWAP must minimize waste of time.
- The SWAP must minimize waste of money.
- Use existing plans where appropriate.
- Use existing processes where appropriate.

The SWAP must be effective for obtaining SWG dollars (8 required elements).

Means

The SWAP strategies must be incorporated into program and staff work plans.

The Species of Greatest Conservation Need (SGCN) will be the species found on the Species of Concern (SOC) list. The existing process for making changes to the SOC list will be included in the SWAP to ensure that the SOC list is always current.

The SWAP will use the SOC list to help prioritize CTGCN and SGCN.

The SWAP will identify and prioritize where conservation efforts should be focused.

The SWAP will consider habitat for all fish and wildlife species when prioritizing CTGCN.

The SWAP will utilize existing conservation tools (e.g., CAPS, the SOC list) to prioritize CTGCN.

The SWAP will only address species on the SOC list (SGCN) and CTGCN.

The SWAP will identify species on the SOC list that may be on the list due to lack of information. These species make be targeted for survey and inventory.

The SWAP will dovetail with existing FWP plans, identify what is currently being done, and incorporate existing efforts into the SWAP's strategies (e.g., Habitat Montana Plan, species specific management plans, recovery plans).

The SWAP will identify a process to aid FWP in prioritizing work for CTGCN and SGCN.

The SWAP must identify and track realistic benchmarks to demonstrate that FWP is maximizing efficiency.

The SWAP will include potential impacts of climate change, where applicable, when prioritizing community types and SGCN.

To keep the document relevant, the SWAP will identify a process to regularly (e.g., every 5 years) assess and, if necessary, modify CTGCN.

Appendix E. Tiered Community Types

Aquatic Community Types

Community Type	Tier
Intermountain Valley Rivers	I
Intermountain Valley Streams	I
Mixed Source Rivers	I
Mountain Streams	I
Prairie Rivers	I
Prairie Streams	I
Select Lowland Lakes (52)	I
Select Mountain Lakes (36)	I
Select Lowland Reservoirs (12)	I
Select Mountain Reservoirs (1)	I
Lowland Lakes	II
Mountain Lakes	II
Lowland Reservoirs	III
Mountain Reservoirs	III

Terrestrial Community Types

Ecoregion	Community Type	Tier
Canadian Rockies	Alpine Sparse or Barren & Alpine Grassland and Shrubland	I
Canadian Rockies	Conifer-dominated Forest and Woodland (xeric-mesic)	I
Canadian Rockies	Deciduous Shrubland	I
Canadian Rockies	Floodplain and Riparian	I
Canadian Rockies	Montane Grassland	I
Canadian Rockies	Open Water	I
Canadian Rockies	Wetlands	I
Canadian Rockies	Cliff, Canyon, and Talus	II
Canadian Rockies	Conifer-dominated Forest and Woodland (mesic-wet)	II
Canadian Rockies	Deciduous Dominated Forest and Woodland	II
Canadian Rockies	Harvested Forest	II
Canadian Rockies	Mixed Deciduous/Coniferous Forest and Woodland	II
Canadian Rockies	Recently Burned	II
Canadian Rockies	Agriculture	III
Canadian Rockies	Developed	III
Canadian Rockies	Lowland/Prairie Grassland	III
Canadian Rockies	Sagebrush Steppe & Sagebrush-dominated Shrubland	III
Idaho Batholith	Conifer-dominated Forest and Woodland (mesic-wet)	I
Idaho Batholith	Conifer-dominated Forest and Woodland (xeric-mesic)	I
Idaho Batholith	Deciduous Dominated Forest and Woodland	I
Idaho Batholith	Deciduous Shrubland	I
Idaho Batholith	Floodplain and Riparian	I
Idaho Batholith	Montane Grassland	I
Idaho Batholith	Open Water	I
Idaho Batholith	Wetlands	I

Ecoregion	Community Type	Tier
Idaho Batholith	Alpine Sparse or Barren & Alpine Grassland and Shrubland	II
Idaho Batholith	Cliff, Canyon, and Talus	II
Idaho Batholith	Harvested Forest	II
Idaho Batholith	Recently Burned	II
Idaho Batholith	Agriculture	III
Idaho Batholith	Developed	III
Idaho Batholith	Mixed Deciduous/Coniferous Forest and Woodland	III
Idaho Batholith	Sagebrush Steppe & Sagebrush-dominated Shrubland	III
Middle Rockies	Conifer-dominated Forest and Woodland (xeric-mesic)	I
Middle Rockies	Deciduous Dominated Forest and Woodland	I
Middle Rockies	Floodplain and Riparian	I
Middle Rockies	Montane Grassland	I
Middle Rockies	Open Water	I
Middle Rockies	Sagebrush Steppe & Sagebrush-dominated Shrubland	I
Middle Rockies	Wetlands	I
Middle Rockies	Alpine Sparse or Barren & Alpine Grassland and Shrubland	II
Middle Rockies	Conifer-dominated Forest and Woodland (mesic-wet)	II
Middle Rockies	Deciduous Shrubland	II
Middle Rockies	Harvested Forest	II
Middle Rockies	Lowland/Prairie Grassland	II
Middle Rockies	Recently Burned	II
Middle Rockies	Agriculture	III
Middle Rockies	Bluff, Badland, and Dune	III
Middle Rockies	Cliff, Canyon, and Talus	III
Middle Rockies	Developed	III
Middle Rockies	Introduced Vegetation	III
Middle Rockies	Mining	III
Middle Rockies	Mixed Deciduous/Coniferous Forest and Woodland	III
Middle Rockies	Scrub and Dwarf Shrubland	III
Northern Rockies	Conifer-dominated Forest and Woodland (mesic-wet)	I
Northern Rockies	Conifer-dominated Forest and Woodland (xeric-mesic)	I
Northern Rockies	Deciduous Shrubland	I
Northern Rockies	Floodplain and Riparian	I
Northern Rockies	Montane Grassland	I
Northern Rockies	Open Water	I
Northern Rockies	Wetlands	I
Northern Rockies	Harvested Forest	II
Northern Rockies	Recently Burned	II
Northern Rockies	Agriculture	III
Northern Rockies	Alpine Sparse or Barren & Alpine Grassland and Shrubland	III
Northern Rockies	Cliff, Canyon, and Talus	III
Northern Rockies	Deciduous Dominated Forest and Woodland	III
Northern Rockies	Developed	III
Northern Rockies	Introduced Vegetation	III
Northern Rockies	Mining	III
Northern Rockies	Mixed Deciduous/Coniferous Forest and Woodland	III
Northwestern Glaciated Plains	Deciduous Dominated Forest and Woodland	I
Northwestern Glaciated Plains	Floodplain and Riparian	I

Ecoregion	Community Type	Tier
Northwestern Glaciated Plains	Lowland/Prairie Grassland	I
Northwestern Glaciated Plains	Montane Grassland	I
Northwestern Glaciated Plains	Open Water	I
Northwestern Glaciated Plains	Sagebrush Steppe & Sagebrush-dominated Shrubland	I
Northwestern Glaciated Plains	Wetlands	I
Northwestern Glaciated Plains	Bluff, Badland, and Dune	II
Northwestern Glaciated Plains	Conifer-dominated Forest and Woodland (xeric-mesic)	II
Northwestern Glaciated Plains	Deciduous Shrubland	II
Northwestern Glaciated Plains	Agriculture	III
Northwestern Glaciated Plains	Cliff, Canyon, and Talus	III
Northwestern Glaciated Plains	Conifer-dominated Forest and Woodland (mesic-wet)	III
Northwestern Glaciated Plains	Developed	III
Northwestern Glaciated Plains	Harvested Forest	III
Northwestern Glaciated Plains	Introduced Vegetation	III
Northwestern Glaciated Plains	Mixed Deciduous/Coniferous Forest and Woodland	III
Northwestern Glaciated Plains	Recently Burned	III
Northwestern Glaciated Plains	Scrub and Dwarf Shrubland	III
Northwestern Great Plains	Conifer-dominated Forest and Woodland (xeric-mesic)	I
Northwestern Great Plains	Deciduous Dominated Forest and Woodland	I
Northwestern Great Plains	Floodplain and Riparian	I
Northwestern Great Plains	Lowland/Prairie Grassland	I
Northwestern Great Plains	Montane Grassland	I
Northwestern Great Plains	Open Water	I
Northwestern Great Plains	Sagebrush Steppe & Sagebrush-dominated Shrubland	I
Northwestern Great Plains	Wetlands	I
Northwestern Great Plains	Bluff, Badland, and Dune	II
Northwestern Great Plains	Deciduous Shrubland	II
Northwestern Great Plains	Agriculture	III
Northwestern Great Plains	Alpine Sparse or Barren & Alpine Grassland and Shrubland	III
Northwestern Great Plains	Cliff, Canyon, and Talus	III
Northwestern Great Plains	Conifer-dominated Forest and Woodland (mesic-wet)	III
Northwestern Great Plains	Developed	III
Northwestern Great Plains	Harvested Forest	III
Northwestern Great Plains	Introduced Vegetation	III
Northwestern Great Plains	Mining	III
Northwestern Great Plains	Mixed Deciduous/Coniferous Forest and Woodland	III
Northwestern Great Plains	Recently Burned	III
Northwestern Great Plains	Scrub and Dwarf Shrubland	III
Wyoming Basin	Conifer-dominated Forest and Woodland (xeric-mesic)	I
Wyoming Basin	Floodplain and Riparian	I
Wyoming Basin	Lowland/Prairie Grassland	I
Wyoming Basin	Open Water	I
Wyoming Basin	Sagebrush Steppe & Sagebrush-dominated Shrubland	I
Wyoming Basin	Scrub and Dwarf Shrubland	I
Wyoming Basin	Wetlands	I
Wyoming Basin	Bluff, Badland, and Dune	II
Wyoming Basin	Cliff, Canyon, and Talus	II
Wyoming Basin	Agriculture	III

Ecoregion	Community Type	Tier
Wyoming Basin	Deciduous Dominated Forest and Woodland	III
Wyoming Basin	Deciduous Shrubland	III
Wyoming Basin	Developed	III
Wyoming Basin	Introduced Vegetation	III
Wyoming Basin	Montane Grassland	III

Appendix F: Lakes and Reservoirs whose Tier ranks were increased because of importance to one or more SGCN

Lowland Lakes (17)

Dickey Lake
Elk Lake
Flathead Lake
Gehring Pond
Glen Lake
Holland Lake
Lake Alva
Lake Inez
McDonald Lake
Rainy Lake
Red Rock Lake, lower
Red Rock Lake, upper
Seeley Lake
Sophie Lake
Swan Lake
Upper Stillwater Lake
Whitefish Lake

Lowland Reservoirs (7)

Cabinet Gorge Reservoir
Fort Peck Reservoir
Hungry Horse Reservoir
Lake Koocanusa
Lower Willow Creek Reservoir
Noxon Rapids Reservoir
Thompson Falls Reservoir

Mountain Lakes (37)

Akokala Lake
Arrow Lake
Big Salmon Lake
Bowman Lake
Bull Lake
Cerulean Lake
Cherry Lake
Cracker Lake
Cyclone Lake
Frozen Lake
Granite Lake
Harrison Lake
Kintla Lake
Lake Isabel
Lincoln Lake
Lindbergh Lake
Little Therriault Lake
Logging Lake
Lower Miner Lakes
Lower Quartz Lake
Middle Quartz Lake
Mussigbrod Lake
Otatso Lake
Pintler Lake
Quartz Lake
Rogers Lake
Silver Lake
Slide Lake
Squaw Lake
Storm Lake
Tally Lake
Trout Lake
Twin Lake (FWP Region 3)
Twin Lake, lower (FWP Region 2)
Twin Lake, upper (FWP Region 2)
Upper Kintla Lake
Upper Whitefish Lake

Mountain Reservoirs (2)

East Fork Reservoir
Painted Rocks Reservoir

Appendix G: Process for Identifying Regional Aquatic Focal Areas for Montana's State Wildlife Action Plan Revision

Regional Focus Areas will be identified in Montana's State Wildlife Action Plan (SWAP) revision to guide attention to specific geographical areas of Montana that are in greatest need of conservation. While many factors are considered in this process, 2 elements drive the decisions: Species of Greatest Conservation Need (SGCN) and Community Types of Greatest Conservation Need (CTGCN).

The purpose of Montana's first SWAP (the Comprehensive Fish and Wildlife Conservation Strategy 2005) was to prioritize SGCN and their associated habitats for State Wildlife Grant (SWG) funding. This SWAP revision will have broader applications. Because the future of SWG is uncertain, our revised SWAP may be used to help secure additional funding for FWP and our partners, and to help identify new partnerships. Though the SWAP may be broader in application, the scope remains focused on SGCN and CTGCN.

THE PROCESS

FWP members of the SWAP Aquatic Technical Advisory Teams (TAT) will convene regional meetings and invite internal and external experts (e.g., species, habitat, threats) to a day-long meeting to identify focus areas within the region. The groups will evaluate the region and identify Focal Areas at the HUC 5 or HUC 6 level. Regions may identify Focal Areas at a finer scale than HUC 6 if they choose.

It is likely that Focal Areas will be identified where, if resources are invested, species and community types other than SGCN and CTGCN will benefit. While these incidental results are valuable, the **primary** reason for Focal Area identification is to identify areas to focus conservation efforts for the benefit SGCN and CTGCN.

<u>Primary considerations</u>

1. Species of Greatest Conservation Need presence, distribution, and richness – *data layers and expert knowledge*

2. Community Types of Greatest Conservation Need – Tier I will have the highest consideration – *data layers and expert knowledge*

3. Current impacts (e.g., oil and gas, roads) – *data layers and expert knowledge*

4. Future threats (e.g., urban development, resource extraction) – *data layers and expert knowledge*

   <u>Magnitude</u>
   - Area affected throughout (>50%) OR most or all species affected (>50%) OR severe damage or loss
   - Widespread (15-50%) OR many affected (25-50%) OR significant damage

- Scattered (5-15%) OR some affected (5-25%) OR moderate damage
- Local or none (<5%) OR few or none affected (<5%) OR little or no damage

Urgency
- Imminent; now - 3 years; High probability (50-100%)
- Near term; 3-10 years; Moderate probability (10-49%)
- Long term; > 10 years; Low probability or none (0-9%)

5. Connectivity – *data layers and expert knowledge*

Secondary considerations (in no particular order)
1. Other important species and their associated habitat needs – *data layers and expert knowledge*

2. Likelihood that SGCN populations and community types will persist for the foreseeable future (the next 20-30 years), if current conditions prevail – *expert knowledge*
   - Native communities are non-existent and/or native species have been extirpated
   - Poor Viability – High risk of community type or SGCN extirpation
   - Fair Viability – Conditions are non-optimal, such that persistence is uncertain OR likely to persist but not necessarily maintain current or historical size/area
   - Good Viability – Conditions are *favorable* for persistence of community types and SGCN; likely will continue into foreseeable future in the current condition or better (e.g., habitat will improve or SGCN population size will increase)
   - Excellent Viability – Conditions are *optimal* for persistence of community types and SGCN; likely will continue into foreseeable future in the current condition or better (e.g., habitat will improve or SGCN population size will increase)

3. Restoration opportunities for SGCN and Community Types – *expert knowledge*
   - Irreversible
   - Reversible with difficulty and high expense/effort
   - Reversible with some difficulty and moderate expense/effort
   - Easily reversible with low expense/effort

4. Land protection status – *data layers*

5. Watershed integrity – *data layers*

6. Irrigation impacts/dewatering – *expert knowledge*

7. Climate Change Vulnerability Assessment – *data layers*

8. Future fisheries projects (existing investments) – *data layers and expert knowledge*

9. Value (e.g., wild and scenic rivers) – *data layers*

10. Uniqueness or rarity – *expert knowledge*

Social considerations

Relationships with landowners may be considered when identifying focal areas. However, caution should be taken not to place the greatest amount of weight on this factor. The SWAP is not intended to only direct FWP work, but help partners focus their work efforts as well. The first consideration must be to identify areas in Montana that are in greatest need of conservation. Obviously to do work on private land, cooperative landowners are necessary. But, not having a cooperative landowner should not be the only factor preventing an area from being identified as a focal area. If an area is identified as important because of biological considerations above, it could be identified as a focal area, *despite* current landowner cooperation. Landowner cooperation will be considered more in the decision to actually carry out the work, but should not preclude identification of focal areas.

FOCAL AREA TIER DEFINITIONS

Every HUC within each region will be defined as Focal Area Tier I, II, or III.

Tier I. Greatest conservation need.

There is a clear obligation to use resources to implement conservation actions that provide direct benefit to these areas.

Tier II: Moderate conservation need.

Resources could be used to implement conservation actions that provide direct benefit to these areas.

Appendix H: Process for Identifying Regional Terrestrial Focal Areas for Montana's State Wildlife Action Plan Revision

Regional Focus Areas will be identified in Montana's State Wildlife Action Plan (SWAP) revision to guide attention to specific geographical areas of Montana that are in greatest need of conservation. While many factors are considered in this process, 2 elements drive the decisions: Species of Greatest Conservation Need (SGCN) and Community Types of Greatest Conservation Need (CTGCN).

The purpose of Montana's first SWAP (the Comprehensive Fish and Wildlife Conservation Strategy 2005) was to prioritize SGCN and their associated habitats for State Wildlife Grant (SWG) funding. This SWAP revision will have broader applications. Because the future of SWG is uncertain, our revised SWAP may be used to help secure additional funding for FWP and our partners, and to help identify new partnerships. Though the SWAP may be broader in application, the scope remains focused on SGCN and CTGCN.

THE PROCESS

FWP members of the SWAP Terrestrial Technical Advisory Team (TAT) will convene regional meetings and invite internal and external experts (e.g., species, habitat, threats) to a day-long meeting to identify terrestrial focus areas within the region. The groups will evaluate the region and identify Focal Areas using HUCs 5 and 6 as a base unit.

It is likely that Focal Areas will be identified where, if resources are invested, species and community types other than SGCN and CTGCN will benefit. While these incidental results are valuable, the **primary** reason for Focal Area identification is to identify areas to focus conservation efforts for the benefit SGCN and CTGCN.

Primary considerations

1. Species of Greatest Conservation Need presence, distribution, and richness – *data layers and expert knowledge*

2. Community Types of Greatest Conservation Need – Tier I will have the highest consideration – *data layers and expert knowledge*

3. Current impacts (e.g., oil and gas, roads) – *data layers and expert knowledge*

4. Future threats (e.g., urban development, resource extraction) – *data layers and expert knowledge*

   Magnitude
   - Area affected throughout (>50%) OR most or all species affected (>50%) OR severe damage or loss
   - Widespread (15-50%) OR many affected (25-50%) OR significant damage
   - Scattered (5-15%) OR some affected (5-25%) OR moderate damage

- Local or none (<5%) OR few or none affected (<5%) OR little or no damage

Urgency
- Imminent; now - 3 years; High probability (50-100%)
- Near term; 3-10 years; Moderate probability (10-49%)
- Long term; > 10 years; Low probability or none (0-9%)

5. Large intact landscape blocks – *data layers*

6. Connectivity – *data layers*

Secondary considerations (in no particular order)

1. Other important species and their associated habitat needs (e.g., distribution, richness) – *data layers and expert knowledge*

2. Likelihood that SGCN populations and community types will persist for the foreseeable future (the next 20-30 years), if current conditions prevail – *expert knowledge*
   - Native communities are non-existent and/or native species have been extirpated
   - Poor Viability – High risk of community type or SGCN extirpation
   - Fair Viability – Conditions are non-optimal, such that persistence is uncertain OR likely to persist but not necessarily maintain current or historical size/area
   - Good Viability – Conditions are *favorable* for persistence of community types and SGCN; likely will continue into foreseeable future in the current condition or better (e.g., habitat will improve or SGCN population size will increase)
   - Excellent Viability – Conditions are *optimal* for persistence of community types and SGCN; likely will continue into foreseeable future in the current condition or better (e.g., habitat will improve or SGCN population size will increase)

3. Restoration opportunities for SGCN and Community Types – *expert knowledge*
   - Irreversible
   - Reversible with difficulty and high expense/effort
   - Reversible with some difficulty and moderate expense/effort
   - Easily reversible with low expense/effort

4. Land protection status – *data layers*

5. Irrigation impacts/dewatering – *expert knowledge*

6. Climate Change Vulnerability Assessment – *data layers*

7. Uniqueness or rarity – *expert knowledge*

Social considerations

Relationships with landowners may be considered when identifying focal areas. However, caution should be taken not to place the greatest amount of weight on this factor. The SWAP is not intended to only direct FWP work, but help partners focus their work efforts as well. The first consideration must be to identify areas in Montana that are in greatest need of conservation. Obviously to do work on private land, cooperative landowners are necessary. But, not having a cooperative landowner should not be the only factor preventing an area from being identified as a focal area. If an area is identified as important because of biological considerations above, it could be identified as a focal area, *despite* current landowner cooperation. Landowner cooperation will be considered more in the decision to actually carry out the work, but should not preclude identification of focal areas.

FOCAL AREA TIER DEFINITIONS

All land within each region will be defined as Focal Area Tier I, II, or III.

Tier I. Greatest conservation need.

There is a clear obligation to use resources to implement conservation actions that provide direct benefit to these areas.

Tier II: Moderate conservation need.

Resources could be used to implement conservation actions that provide direct benefit to these areas.

Appendix I. Methodology for developing Regional Focal Areas

Regional Focal Areas (Appendices J-M) were identified to guide attention to specific geographical areas of Montana that are in greatest need of conservation and to help focus conservation efforts in an increasingly inadequate funding environment. However, this SWAP encourages to first design projects that address threats and impacts at the community type level, rather than this focal area level. There likely will be a greater benefit to more species with the community type approach.

While many factors were considered in the identification process of Focal Areas, 2 elements drove the decisions: the presence of both Species of Greatest Conservation Need (SGCN) and Community Types of Greatest Conservation Need (CTGCN). Two documents outline the process used to identify Aquatic and Terrestrial Focal Areas (Appendices G and H). These documents made it clear to the teams *what* factors they needed to consider, but not *how* they should weigh the different factors. This intentionally was left open for geographical interpretation as threats, species assemblages, community types, and protections vary greatly between eastern and western Montana. Please see Appendices J and K for more information on the differences across the state.

Focal areas were delineated in ArcGIS for display and analysis. Ten (5th code) and 8 (4th code) Hydrologic Unit Codes (HUC) were selected by the technical teams and merged in ArcGIS to initially identify the bounds of each focal area. Each focal area was then assessed individually to determine if logical boundary changes were needed. These changes included clipping out existing protected areas, using another feature as a border (e.g., road, dam, parcel boundary, community type), extending or clipping to include species' ranges (polygon data), and/or extending or clipping to include Large Intact Landscape Block (LILB) GIS data, areas of contiguous intact habitat identified in Montana Fish, Wildlife and Parks' (FWP) CAPS (FWP 2010), and/or for FWP Region 3, blocks of land that connect core habitats for grizzly bear and/or wolverine (connectivity).

Habitats important for wolverine connectivity were delineated by the Wildlife Conservation Society (2007), whereas grizzly bear core habitats were inferred using the LILB GIS layer for forest generalist habitats. Core habitats needed to include at least 90% native habitat with a minimum of 40% forest. The least cost paths between LILB of forest habitat polygons were generated in ArcGIS using road surfaces and structures as a cost surface (FWP Connectivity Project, documentation pending). Native habitats (low cost) and anthropogenic features (high cost) represented the movement cost surface. These areas of core habitat and connectivity were then merged and dissolved using a spatial geoprocess in ArcGIS. Unprotected habitats within this layer were then removed, or 'clipped' in GIS. Protected habitats included any lands that are Designated Wilderness, Designated Roadless Area, Designated Wilderness Study Area, U.S. Fish and Wildlife Service National Wildlife Refuge, under Conservation Easement, or are a State Wildlife Management Area. The subsequent layer was used to expand existing Focal Areas that were previously identified by FWP biologists. For example, if the unprotected layer polygon shared a boundary with an existing Focal Area, those habitats were merged with an existing Focal Area.

Focal Area Tiers

All focal areas were ranked by the technical teams and identified as Tier I or Tier II.

Tier I. Greatest conservation need. There is a clear obligation to use resources to implement conservation actions that provide direct benefit to these areas.

Tier II: Moderate conservation need. Resources could be used to implement conservation actions that provide direct benefit to these areas.

Citations

Brock, B. L., R. M. Inman, K. H. Inman, A. J. McCue, M. L. Packila, and B. Giddings. 2007. Broad-scale wolverine habitat in the conterminous Rocky Mountain states. Chapter 2 in Greater Yellowstone Wolverine Study, Cumulative Report, May 2007. Wildlife Conservation Society, North America Program, General Technical Report, Bozeman, Montana.

Montana Fish, Wildlife & Parks. 2010. Crucial Areas Assessment Layer Documentation Summary. Montana Fish, Wildlife & Parks Data Services Section. Accessed 12/16/2013: www.fwp.mt.gov/fwpDoc.html?id=42590.

Appendix J: Tier I Aquatic Focal Areas

Tier I. Greatest conservation need. There is a clear obligation to use resources to implement conservation actions that provide direct benefit to these areas.

One hundred Tier I aquatic focal areas were identified. These ranged in size from a small mountain stream to the entire length of a major river. The larger focus areas were generally found in eastern Montana, where many Species of Greatest Conservation Need (SGCN) were found in the same water body. The approach to identify focal areas in western Montana was different as multiple SGCN ranges generally did not overlap. Many western focal areas were identified using a single species approach instead of the multi-species approach in the east. Therefore, large, single-system focal areas were identified in the east, and smaller focal areas in the west.

The Species of Greatest Conservation Need commonly found within each focal area are listed below. If you would like more information (e.g., other species, threats, and impacts) on individual focal areas, please contact FWP at mtswap@mt.gov.

While these areas were chosen to focus conservation efforts, it is not implied that efforts only be restricted to these areas.

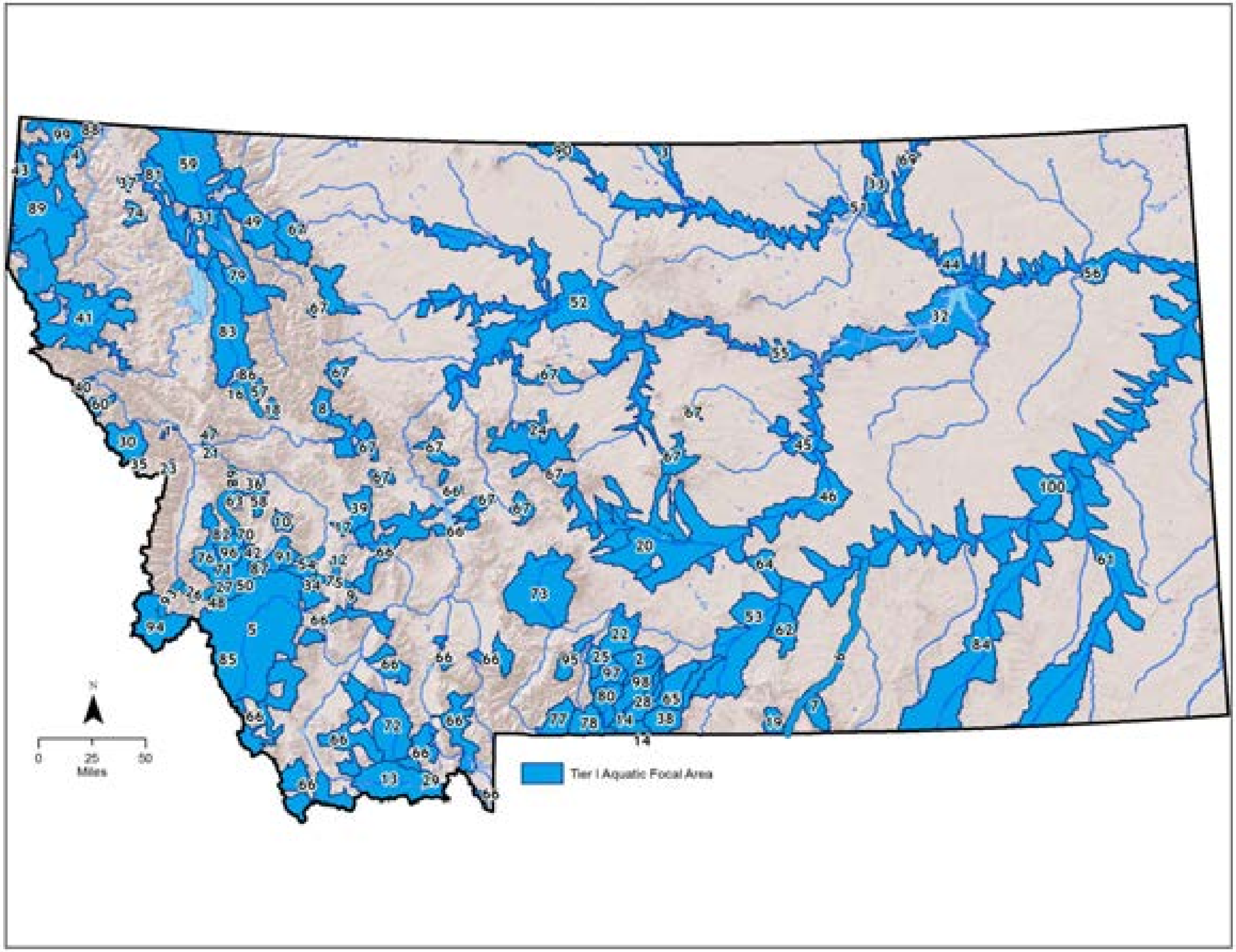

Figure 100. Tier I Aquatic Focal Areas

Number	Focal Area Name	Species
1	Albert Creek	Bull Trout
		Westslope Cutthroat Trout
2	Bad Canyon	Yellowstone Cutthroat Trout
3	Battle Creek	Iowa Darter
		Northern Redbelly Dace
		Sauger
4	Big Creek	Bull Trout
		Torrent Sculpin
		Westslope Cutthroat Trout
5	Big Hole -grayling	Arctic Grayling
		Lake Trout
		Western Pearlshell
		Westslope Cutthroat Trout
6	Bighorn River - line	Sauger
		Sturgeon Chub
7	Black Canyon	Sauger
		Yellowstone Cutthroat Trout
8	Blackfoot River - Scapegoat	Bull Trout
		Westslope Cutthroat Trout
9	Blacktail Creek	Westslope Cutthroat Trout
10	Boulder Creeks	Bull Trout
		Westslope Cutthroat Trout
11	Browns Gulch	Western Pearlshell
		Westslope Cutthroat Trout
12	Browns Gulch - line	Western Pearlshell
		Westslope Cutthroat Trout
13	Centennial	Arctic Grayling
		Lake Trout
		Westslope Cutthroat Trout
14	Clarks Fork	Yellowstone Cutthroat Trout
15	Clearwater River - line	Bull Trout
		Western Pearlshell
		Westslope Cutthroat Trout
16	Clearwater-Deer	Bull Trout
		Western Pearlshell
		Westslope Cutthroat Trout
17	Cottonwood Creek - Clark Fork	Westslope Cutthroat Trout
18	Cottonwood Creek - North	Bull Trout

Number	Focal Area Name	Species
18	Cottonwood Creek - North	Westslope Cutthroat Trout
19	Crooked Creek	Yellowstone Cutthroat Trout
20	Dace distribution	Northern Redbelly Dace Northern Redbelly/Finescale Dace Westslope Cutthroat Trout
21	Deer Creek	Bull Trout Westslope Cutthroat Trout
22	Dick Creek	Bull Trout Westslope Cutthroat Trout
23	Dry Fork- Belt Creek Restoration	Westslope Cutthroat Trout
24	East boulder	Yellowstone Cutthroat Trout
25	East Fork Bitterroot River	Bull Trout Westslope Cutthroat Trout
26	East Fork Bitterroot River - line	Bull Trout Western Pearlshell Westslope Cutthroat Trout
27	East Rosebud	Yellowstone Cutthroat Trout
28	Elk Lake - lake trout	Arctic Grayling Lake Trout Westslope Cutthroat Trout
29	Fish Creek	Bull Trout Westslope Cutthroat Trout
30	Flathead	Bull Trout Pygmy Whitefish Westslope Cutthroat Trout
31	Fort peck 2	Blue Sucker Paddlefish Pallid Sturgeon Sauger
32	Frenchman	Iowa Darter
33	German Gulch	Westslope Cutthroat Trout
34	Granite Creek	Bull Trout Westslope Cutthroat Trout
35	Harvey Creek	Bull Trout Westslope Cutthroat Trout
36	Jim Creek Bull Trout	Bull Trout Torrent Sculpin

Number	Focal Area Name	Species
36	Jim Creek Bull Trout	Western Pearlshell Westslope Cutthroat Trout
37	Lake Fork of Rock Creek	Yellowstone Cutthroat Trout
38	Little Blackfoot	Westslope Cutthroat Trout
39	Little Joe Creek	Bull Trout Westslope Cutthroat Trout
40	Lower Clark Fork	Bull Trout Western Pearlshell Westslope Cutthroat Trout
41	Lower Deer Creek	Yellowstone Cutthroat Trout
42	Lower East Fork Rock Creek	Bull Trout Westslope Cutthroat Trout
43	Lower Kootenai	Bull Trout Columbia Basin Redband Trout Torrent Sculpin Western Pearlshell Westslope Cutthroat Trout White Sturgeon
44	Lower Milk River	Blue Sucker Iowa Darter Northern Redbelly Dace Northern Redbelly/Finescale Dace Paddlefish Pallid Sturgeon Pearl Dace Sauger Shortnose Gar Sicklefin Chub Sturgeon Chub
45	Lower Musselshell	Northern Redbelly Dace Northern Redbelly/Finescale Dace Sauger
46	Lower Musselshell	Blue Sucker Northern Redbelly/Finescale Dace Sauger
47	Lower rattlesnake creek	Bull Trout Westslope Cutthroat Trout

Number	Focal Area Name	Species
48	Meadow Creek - Bitterroot	Bull Trout
		Westslope Cutthroat Trout
49	Middle Fork Flathead River - Non Wilderness	Bull Trout
		Westslope Cutthroat Trout
50	Middle Fork Rock Creek	Bull Trout
		Westslope Cutthroat Trout
51	Middle Milk River	Blue Sucker
		Iowa Darter
		Northern Redbelly Dace
		Paddlefish
		Pearl Dace
		Sauger
52	Middle Missouri	Blue Sucker
		Northern Redbelly Dace
		Northern Redbelly/Finescale Dace
		Paddlefish
		Pallid Sturgeon
		Sauger
		Sturgeon Chub
53	Middle Yellowstone/Lower Clark Fork	Sauger
		Yellowstone Cutthroat Trout
54	Mill-Willow	Westslope Cutthroat Trout
55	Missouri	Blue Sucker
		Paddlefish
		Pallid Sturgeon
		Sauger
		Sicklefin Chub
		Sturgeon Chub
56	Missouri2	Blue Sucker
		Iowa Darter
		Northern Redbelly Dace
		Northern Redbelly/Finescale Dace
		Paddlefish
		Pallid Sturgeon
		Pearl Dace
		Sauger
		Shortnose Gar
		Sicklefin Chub

Number	Focal Area Name	Species
56	Missouri2	Sturgeon Chub
57	Morrell Creek	Bull Trout Westslope Cutthroat Trout
58	North and South Forks Lower Willow Creek	Western Pearlshell Westslope Cutthroat Trout
59	North Fork Flathead River	Bull Trout Westslope Cutthroat Trout
60	Oregon Gulch / Cedar Creek	Bull Trout Westslope Cutthroat Trout
61	Powder River	Blue Sucker Paddlefish Sauger Sturgeon Chub
62	Pryor Creek	No SGCN documented
63	Ranch Creek	Bull Trout Westslope Cutthroat Trout
64	Razor Creek	No SGCN documented
65	Redlodge Creek	Yellowstone Cutthroat Trout
66	Region 3 WCT Distribution	Arctic Grayling Western Pearlshell Westslope Cutthroat Trout
67	Region 4 WCT Distribution	Northern Redbelly Dace Westslope Cutthroat Trout
68	Rock Creek	Iowa Darter
69	Rock Creek - line	Bull Trout Westslope Cutthroat Trout
70	Rock Creek Mainstem	Bull Trout Westslope Cutthroat Trout
71	Ross Fork Rock Creek	Bull Trout Western Pearlshell Westslope Cutthroat Trout
72	Ruby River	Arctic Grayling Westslope Cutthroat Trout
73	Sheilds YCT	Yellowstone Cutthroat Trout
74	Sheppard-Good Creek WCT Cons Pop	Bull Trout Westslope Cutthroat Trout
75	Silver Bow Creek - line	Westslope Cutthroat Trout
76	Skalkaho-Burnt Fork Bitterroot	Bull Trout

Number	Focal Area Name	Species
76	Skalkaho-Burnt Fork Bitterroot	Westslope Cutthroat Trout
77	Slough Creek	Yellowstone Cutthroat Trout
78	Slough/hell roaring	Yellowstone Cutthroat Trout
79	South Fork Flathead River - Non Wilderness	Bull Trout Pygmy Whitefish Westslope Cutthroat Trout
80	Stillwater	Yellowstone Cutthroat Trout
81	Stillwater River (Flathead R)	Bull Trout Westslope Cutthroat Trout
82	Stoney Creek - R2A	Bull Trout Westslope Cutthroat Trout
83	Swan River	Bull Trout Pygmy Whitefish Westslope Cutthroat Trout
84	Tongue River	Blue Sucker Paddlefish Sauger Sturgeon Chub
85	Twin Lake -lake trout	Arctic Grayling Lake Trout Westslope Cutthroat Trout
86	Upper Clearwater	Bull Trout Western Pearlshell Westslope Cutthroat Trout
87	Upper Deer	Yellowstone Cutthroat Trout
88	Upper East Fork Rock Creek and East Fork Reservoir	Bull Trout Westslope Cutthroat Trout
89	Upper Kootenai River	Bull Trout Westslope Cutthroat Trout
90	Upper Kootenai River	Bull Trout Columbia Basin Redband Trout Pygmy Whitefish Torrent Sculpin Westslope Cutthroat Trout White Sturgeon
91	Upper Milk River	Northern Redbelly Dace Sauger
92	Upper Warm Springs Creek	Bull Trout

Number	Focal Area Name	Species
92	Upper Warm Springs Creek	Westslope Cutthroat Trout
93	Warm Springs Creek - line	Bull Trout
		Westslope Cutthroat Trout
94	West Fork Bitterroot River	Bull Trout
		Westslope Cutthroat Trout
95	West Fork Bitterroot River - line	Bull Trout
		Western Pearlshell
		Westslope Cutthroat Trout
96	West fork boulder	Yellowstone Cutthroat Trout
97	West Fork Rock Creek Drainage	Bull Trout
		Western Pearlshell
		Westslope Cutthroat Trout
98	West Rosebud	Yellowstone Cutthroat Trout
99	Yaak River	Bull Trout
		Columbia Basin Redband Trout
		Western Pearlshell
		Westslope Cutthroat Trout
100	Yellowstone River	Blue Sucker
		Iowa Darter
		Northern Redbelly Dace
		Paddlefish
		Pallid Sturgeon
		Sauger
		Shortnose Gar
		Sicklefin Chub
		Sturgeon Chub

Appendix K: Tier I Terrestrial Focal Areas

Tier I. Greatest conservation need. There is a clear obligation to use resources to implement conservation actions that provide direct benefit to these areas.

Fifty-five Tier I terrestrial focal areas were identified. These ranged in size from a small area (23,409 acres) providing connectivity in northwestern Montana, to a large contiguous sagebrush and grassland landscape in eastern Montana (2,548,909 acres). It is clear by looking at the map below that the approach to identify terrestrial focal areas differed east and west of the Continental Divide.

In eastern Montana, the teams focused on large intact landscapes to provide the largest area possible to develop conservation actions for multiple Species of Greatest Conservation Need (SGCN). Connectivity between protected landscapes (e.g., wilderness areas, roadless areas) was the focus in the western part of the state, resulting in numerous smaller focal areas.

The Species of Greatest Conservation Need commonly associated with the community types within each focal area are listed below. If you would like more information (e.g., other species, threats, and impacts) on individual focal areas, please contact FWP at mtswap@mt.gov.

While these areas were identified to help focus conservation efforts, it is not implied that efforts only be restricted to these areas.

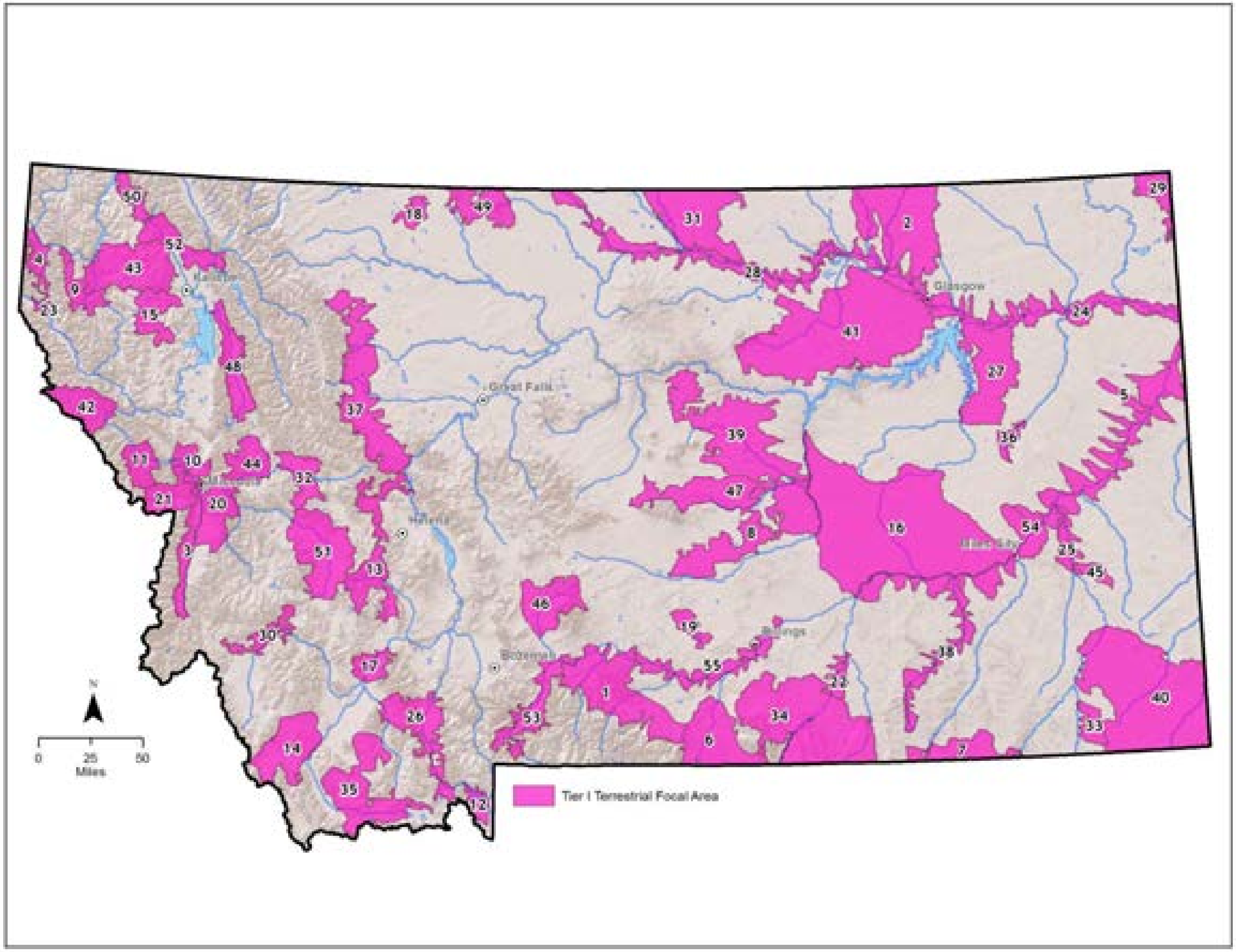

Figure 101. Tier I Terrestrial Focal Areas

Number	Focal Area Name	Animal Subgroup	Species Name
1	Beartooth Face	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Trumpeter Swan

Number	Focal Area Name	Animal Subgroup	Species Name
1	Beartooth Face	Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	White-tailed Prairie Dog
		Mammals	Wolverine
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
2	Bittercreek	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron

Number	Focal Area Name	Animal Subgroup	Species Name
2	Bittercreek	Birds	Greater Sage-Grouse
		Birds	Horned Grebe
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sedge Wren
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Swift Fox
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Smooth Greensnake
		Reptiles	Western Hog-nosed Snake
3	Bitterroot - Clark Fork Riparian Corridor	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak

Number	Focal Area Name	Animal Subgroup	Species Name
3	Bitterroot - Clark Fork Riparian Corridor	Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
4	Bull River	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker

Number	Focal Area Name	Animal Subgroup	Species Name
4	Bull River	Birds	Common Loon
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
5	Burns Creek	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Ferruginous Hawk

Number	Focal Area Name	Animal Subgroup	Species Name
5	Burns Creek	Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
6	Cottonwood Triangle	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Black-necked Stilt
		Birds	Blue-gray Gnatcatcher
		Birds	Bobolink
		Birds	Brewer's Sparrow

Number	Focal Area Name	Animal Subgroup	Species Name
6	Cottonwood Triangle	Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat

Number	Focal Area Name	Animal Subgroup	Species Name
6	Cottonwood Triangle	Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	White-tailed Prairie Dog
		Mammals	Wolverine
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
7	Decker	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse

Number	Focal Area Name	Animal Subgroup	Species Name
7	Decker	Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
8	Devil's Basin	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse

Number	Focal Area Name	Animal Subgroup	Species Name
8	Devil's Basin	Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
9	East Cabinet Front	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow

Number	Focal Area Name	Animal Subgroup	Species Name
9	East Cabinet Front	Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
10	Evaro Hill - North Hills	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow

Number	Focal Area Name	Animal Subgroup	Species Name
10	Evaro Hill - North Hills	Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
11	Fish Creek Connectivity	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker

Number	Focal Area Name	Animal Subgroup	Species Name
11	Fish Creek Connectivity	Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
12	Hebgen	Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker

Number	Focal Area Name	Animal Subgroup	Species Name
12	Hebgen	Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Bison
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat

Number	Focal Area Name	Animal Subgroup	Species Name
12	Hebgen	Mammals	Wolverine
13	Helena / East Continental Divide	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Pinyon Jay

Number	Focal Area Name	Animal Subgroup	Species Name
13	Helena / East Continental Divide	Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	White-tailed Ptarmigan
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Great Basin Pocket Mouse
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Milksnake
14	Horse Prairie Sagebrush Associates	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern

Number	Focal Area Name	Animal Subgroup	Species Name
14	Horse Prairie Sagebrush Associates	Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Pinyon Jay
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Great Basin Pocket Mouse
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Pygmy Rabbit
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
15	Hubbard	Amphibians	Northern Leopard Frog
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee

Number	Focal Area Name	Animal Subgroup	Species Name
15	Hubbard	Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
16	Ingomar	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow

Number	Focal Area Name	Animal Subgroup	Species Name
16	Ingomar	Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Least Tern
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox

Number	Focal Area Name	Animal Subgroup	Species Name
16	Ingomar	Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
17	Jefferson	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Pinyon Jay
		Birds	Sage Sparrow

Number	Focal Area Name	Animal Subgroup	Species Name
17	Jefferson	Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Great Basin Pocket Mouse
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Pygmy Rabbit
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Milksnake
18	Kevin Rim	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Horned Grebe
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur

Number	Focal Area Name	Animal Subgroup	Species Name
18	Kevin Rim	Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Reptiles	Greater Short-horned Lizard
		Reptiles	Western Hog-nosed Snake
		Amphibians	Great Plains Toad
19	Lake Basin	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover

Number	Focal Area Name	Animal Subgroup	Species Name
19	Lake Basin	Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
20	Lolo - Clark Fork Connectivity	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl

Number	Focal Area Name	Animal Subgroup	Species Name
20	Lolo - Clark Fork Connectivity	Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
21	Lolo Creek - Northern Bitterroots	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker

Number	Focal Area Name	Animal Subgroup	Species Name
21	Lolo Creek - Northern Bitterroots	Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
22	Lower Bighorn River	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper

Number	Focal Area Name	Animal Subgroup	Species Name
22	Lower Bighorn River	Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
23	Lower Clark fork - grizzly bear	Amphibians	Coeur d'Alene Salamander

Number	Focal Area Name	Animal Subgroup	Species Name
23	Lower Clark fork - grizzly bear	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
24	Lower Missouri - R6	Amphibians	Great Plains Toad

Number	Focal Area Name	Animal Subgroup	Species Name
24	Lower Missouri - R6	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Black-crowned Night-Heron
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Franklin's Gull
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Nelson's Sharp-tailed Sparrow
		Birds	Peregrine Falcon
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sedge Wren
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Preble's Shrew

Number	Focal Area Name	Animal Subgroup	Species Name
24	Lower Missouri - R6	Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Smooth Greensnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
25	Lower Powder River	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew

Number	Focal Area Name	Animal Subgroup	Species Name
25	Lower Powder River	Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
26	Madison Valley	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Black-crowned Night-Heron
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Franklin's Gull
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike

Number	Focal Area Name	Animal Subgroup	Species Name
26	Madison Valley	Birds	Long-billed Curlew
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Great Basin Pocket Mouse
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Pygmy Rabbit
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
27	McCone	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Caspian Tern
		Birds	Chestnut-collared Longspur
		Birds	Common Tern
		Birds	Ferruginous Hawk

Number	Focal Area Name	Animal Subgroup	Species Name
27	McCone	Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Horned Grebe
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Western Hog-nosed Snake
28	Milk River	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	American White Pelican
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo

Number	Focal Area Name	Animal Subgroup	Species Name
28	Milk River	Birds	Black-crowned Night-Heron
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Caspian Tern
		Birds	Chestnut-collared Longspur
		Birds	Clark's Grebe
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Franklin's Gull
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Horned Grebe
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Swift Fox

Number	Focal Area Name	Animal Subgroup	Species Name
28	Milk River	Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Western Hog-nosed Snake
29	Missouri Coteau	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	American White Pelican
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Burrowing Owl
		Birds	Caspian Tern
		Birds	Chestnut-collared Longspur
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Nelson's Sharp-tailed Sparrow
		Birds	Peregrine Falcon
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sedge Wren
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Arctic Shrew
		Mammals	Hoary Bat

Number	Focal Area Name	Animal Subgroup	Species Name
29	Missouri Coteau	Mammals	Northern Short-tailed Shrew
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Swift Fox
		Reptiles	Greater Short-horned Lizard
		Reptiles	Smooth Greensnake
		Reptiles	Western Hog-nosed Snake
30	North Big Hole	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery

Number	Focal Area Name	Animal Subgroup	Species Name
30	North Big Hole	Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Pygmy Rabbit
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
31	North Blaine	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Black-crowned Night-Heron
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Horned Grebe
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher

Number	Focal Area Name	Animal Subgroup	Species Name
31	North Blaine	Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Mammals	Black-tailed Prairie Dog
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Swift Fox
		Reptiles	Greater Short-horned Lizard
		Reptiles	Western Hog-nosed Snake
32	Ovando - Helmville Grasslands	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon

Number	Focal Area Name	Animal Subgroup	Species Name
32	Ovando - Helmville Grasslands	Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	White-tailed Ptarmigan
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
33	Prairie Dog/Ferret	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew

Number	Focal Area Name	Animal Subgroup	Species Name
33	Prairie Dog/Ferret	Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
34	Pryors-Big Horns	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Blue-gray Gnatcatcher
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker

Number	Focal Area Name	Animal Subgroup	Species Name
34	Pryors-Big Horns	Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	White-tailed Prairie Dog
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
35	Red Rocks Sagebrush Associates	Amphibians	Northern Leopard Frog

Number	Focal Area Name	Animal Subgroup	Species Name
35	Red Rocks Sagebrush Associates	Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Black-crowned Night-Heron
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Franklin's Gull
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo

Number	Focal Area Name	Animal Subgroup	Species Name
35	Red Rocks Sagebrush Associates	Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Great Basin Pocket Mouse
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Pygmy Rabbit
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
36	Redwater River	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo

Number	Focal Area Name	Animal Subgroup	Species Name
36	Redwater River	Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Western Hog-nosed Snake
37	Rocky Mountain Front	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	Alder Flycatcher
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Black-crowned Night-Heron
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Grebe
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern

Number	Focal Area Name	Animal Subgroup	Species Name
37	Rocky Mountain Front	Birds	Franklin's Gull
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Pinyon Jay
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	White-tailed Ptarmigan
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine

Number	Focal Area Name	Animal Subgroup	Species Name
37	Rocky Mountain Front	Reptiles	Greater Short-horned Lizard
		Reptiles	Western Hog-nosed Snake
38	Rosebud Creek	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Least Tern
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew

Number	Focal Area Name	Animal Subgroup	Species Name
38	Rosebud Creek	Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
39	Sage Grouse Core Area	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover

Number	Focal Area Name	Animal Subgroup	Species Name
39	Sage Grouse Core Area	Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
40	Sagebrush obligate focal area	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron

Number	Focal Area Name	Animal Subgroup	Species Name
40	Sagebrush obligate focal area	Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
41	Sagebrush/grassland	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	American White Pelican
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Black-crowned Night-Heron
		Birds	Black-necked Stilt
		Birds	Bobolink

Number	Focal Area Name	Animal Subgroup	Species Name
41	Sagebrush/grassland	Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Caspian Tern
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Grebe
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Franklin's Gull
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Horned Grebe
		Birds	Least Tern
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake

Number	Focal Area Name	Animal Subgroup	Species Name
41	Sagebrush/grassland	Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
42	Saint Regis	Amphibians	Coeur d'Alene Salamander
		Amphibians	Idaho Giant Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Varied Thrush
		Birds	Veery
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine

Number	Focal Area Name	Animal Subgroup	Species Name
42	Saint Regis	Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
43	Salish	Amphibians	Coeur d'Alene Salamander
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-tailed Ptarmigan
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat

Number	Focal Area Name	Animal Subgroup	Species Name
43	Salish	Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
44	Seeley - Gold Creek	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-tailed Ptarmigan
		Mammals	Canada Lynx
		Mammals	Fisher

Number	Focal Area Name	Animal Subgroup	Species Name
44	Seeley - Gold Creek	Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Preble's Shrew
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
45	Sheep Creek	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog

Number	Focal Area Name	Animal Subgroup	Species Name
45	Sheep Creek	Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake
46	Shields	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck

Number	Focal Area Name	Animal Subgroup	Species Name
46	Shields	Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
47	Snowy Mountains	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow

Number	Focal Area Name	Animal Subgroup	Species Name
47	Snowy Mountains	Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Western Hog-nosed Snake

Number	Focal Area Name	Animal Subgroup	Species Name
48	Swan	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Sage Thrasher
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-tailed Ptarmigan
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat

Number	Focal Area Name	Animal Subgroup	Species Name
48	Swan	Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Snapping Turtle
49	Sweet Grass	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Ferruginous Hawk
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Horned Grebe
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Reptiles	Greater Short-horned Lizard
		Reptiles	Western Hog-nosed Snake
50	Tobacco Foothills	Amphibians	Coeur d'Alene Salamander

Number	Focal Area Name	Animal Subgroup	Species Name
50	Tobacco Foothills	Amphibians	Northern Leopard Frog
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Northern Hawk Owl
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-tailed Ptarmigan
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine

Number	Focal Area Name	Animal Subgroup	Species Name
50	Tobacco Foothills	Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
51	Upper Clark Fork - East Deer Lodge	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker
		Birds	Pinyon Jay
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Mammals	Black-tailed Prairie Dog

Number	Focal Area Name	Animal Subgroup	Species Name
51	Upper Clark Fork - East Deer Lodge	Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fisher
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
52	Whitefish Stillwater	Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Swift
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Bobolink
		Birds	Boreal Chickadee
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Common Loon
		Birds	Common Tern
		Birds	Evening Grosbeak
		Birds	Flammulated Owl
		Birds	Forster's Tern
		Birds	Golden Eagle
		Birds	Gray-crowned Rosy-Finch
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Harlequin Duck
		Birds	Horned Grebe
		Birds	Le Conte's Sparrow
		Birds	Lewis's Woodpecker
		Birds	Long-billed Curlew
		Birds	Northern Goshawk
		Birds	Northern Hawk Owl
		Birds	Peregrine Falcon
		Birds	Pileated Woodpecker

Number	Focal Area Name	Animal Subgroup	Species Name
52	Whitefish Stillwater	Birds	Varied Thrush
		Birds	Veery
		Birds	White-tailed Ptarmigan
		Mammals	Canada Lynx
		Mammals	Fisher
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Northern Bog Lemming
		Mammals	Pygmy Shrew
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Northern Alligator Lizard
		Reptiles	Western Skink
53	Yellowstone	Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Amphibians	Western Toad
		Birds	American Bittern
		Birds	Black Rosy-Finch
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Flammulated Owl
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew

Number	Focal Area Name	Animal Subgroup	Species Name
53	Yellowstone	Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Sage Sparrow
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Trumpeter Swan
		Birds	Varied Thrush
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Canada Lynx
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
54	Yellowstone River	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-billed Cuckoo
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Burrowing Owl
		Birds	Cassin's Finch

Number	Focal Area Name	Animal Subgroup	Species Name
54	Yellowstone River	Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Least Tern
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Nelson's Sharp-tailed Sparrow
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Piping Plover
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sedge Wren
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog
		Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Smooth Greensnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake

Number	Focal Area Name	Animal Subgroup	Species Name
55	Yellowstone River R5T	Amphibians	Great Plains Toad
		Amphibians	Northern Leopard Frog
		Amphibians	Plains Spadefoot
		Birds	American Bittern
		Birds	Baird's Sparrow
		Birds	Black Tern
		Birds	Black-backed Woodpecker
		Birds	Black-billed Cuckoo
		Birds	Black-necked Stilt
		Birds	Bobolink
		Birds	Brewer's Sparrow
		Birds	Brown Creeper
		Birds	Burrowing Owl
		Birds	Cassin's Finch
		Birds	Chestnut-collared Longspur
		Birds	Clark's Nutcracker
		Birds	Evening Grosbeak
		Birds	Ferruginous Hawk
		Birds	Golden Eagle
		Birds	Great Blue Heron
		Birds	Great Gray Owl
		Birds	Greater Sage-Grouse
		Birds	Green-tailed Towhee
		Birds	Harlequin Duck
		Birds	Lewis's Woodpecker
		Birds	Loggerhead Shrike
		Birds	Long-billed Curlew
		Birds	McCown's Longspur
		Birds	Mountain Plover
		Birds	Northern Goshawk
		Birds	Peregrine Falcon
		Birds	Pinyon Jay
		Birds	Red-headed Woodpecker
		Birds	Sage Thrasher
		Birds	Sharp-tailed Grouse
		Birds	Sprague's Pipit
		Birds	Veery
		Birds	White-faced Ibis
		Birds	Yellow-billed Cuckoo
		Mammals	Black-tailed Prairie Dog

Number	Focal Area Name	Animal Subgroup	Species Name
55	Yellowstone River R5T	Mammals	Dwarf Shrew
		Mammals	Fringed Myotis
		Mammals	Grizzly Bear
		Mammals	Hoary Bat
		Mammals	Merriam's Shrew
		Mammals	Pallid Bat
		Mammals	Preble's Shrew
		Mammals	Spotted Bat
		Mammals	Swift Fox
		Mammals	Townsend's Big-eared Bat
		Mammals	Wolverine
		Reptiles	Greater Short-horned Lizard
		Reptiles	Milksnake
		Reptiles	Snapping Turtle
		Reptiles	Spiny Softshell
		Reptiles	Western Hog-nosed Snake

Appendix L: Tier II Aquatic Focal Areas

Tier II: Moderate conservation need. Resources could be used to implement conservation actions that provide direct benefit to these areas.

One hundred and sixty-three Tier II aquatic focal areas were identified. If you would like more information (e.g., other species, threats, and impacts) on individual focal areas, please contact FWP at mtswap@mt.gov.

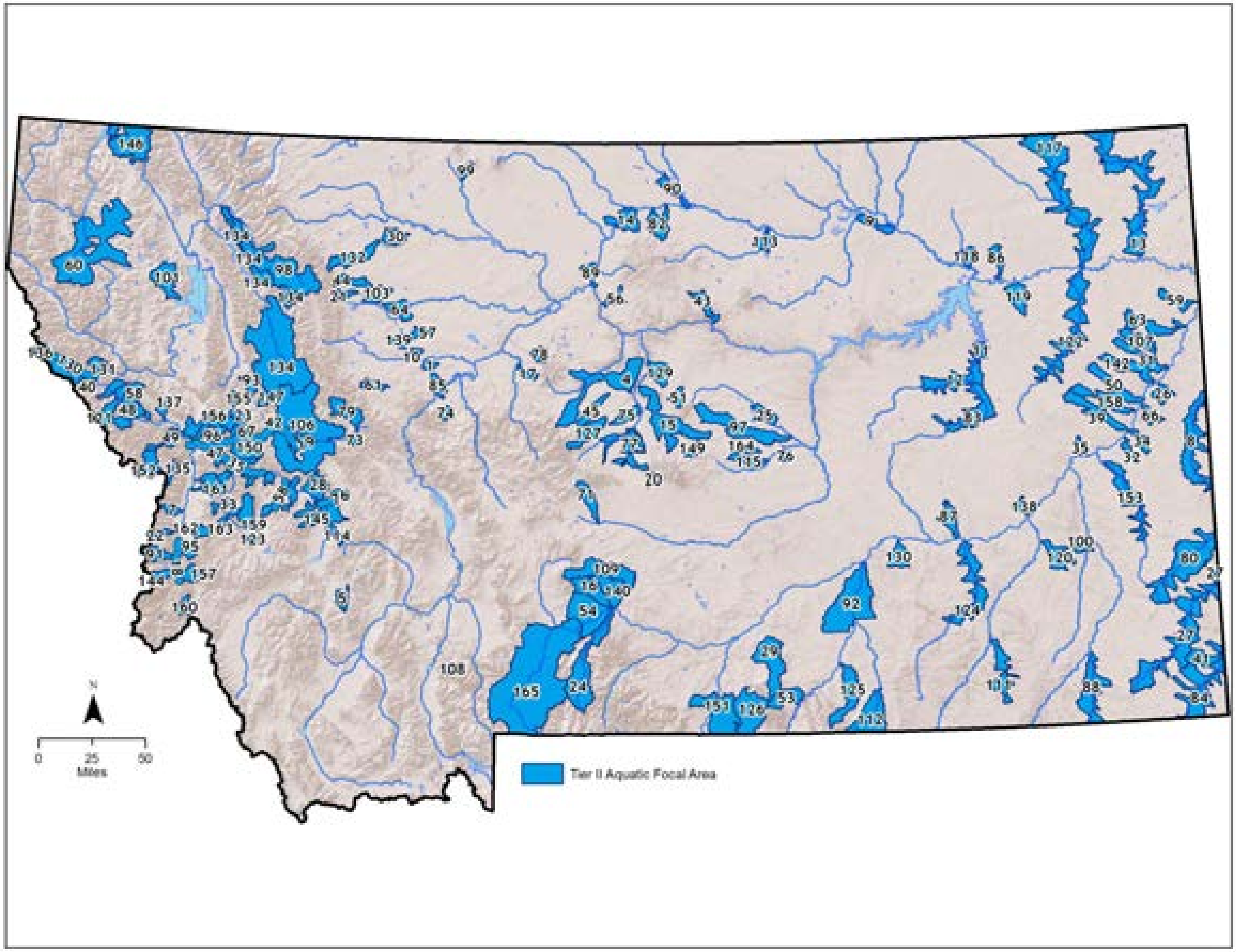

Figure 102. Tier II Aquatic Focal Areas

Number	Focal Area Name
1	Adobe Creek Redbelly Distribution
2	Alder Creek
3	Antelope Gulch - Wood Creek
4	Arrow Creek Redbelly Distribution
5	Basin Creek
6	Bateman Creek - Gillespie Creek
7	Bear Creek - Bitterroot
8	Beaver Creek
9	Beaver creek - middle
10	Big Coulee Creek Redbelly Distribution
11	Big Dry Creek R6A
12	Big Dry Creek R7
13	Big Muddy
14	Big sandy and beaver
15	Big Spring Creek Redbelly Distribution
16	Big Timber
17	Big Willow Creek Redbelly Distribution
18	Blake Creek Redbelly Distribution
19	Blindhorse Creek Redbelly Distribution
20	Blodgett Creek
21	Boles Creek
22	Boulder
23	Box Elder Creek Redbelly Distribution
24	Boxelder Creek
25	Boxelder Creek
26	Brock Creek
27	Brushy Fork of Willow Creek
28	Bullhead Creek Redbelly Distribution
29	Burns Creek
30	Cabin Creek
31	Cabin Creek
32	Cedar Creek
33	Cherry Creek
34	Clark Fork River - Johnson Creek
35	Clark Fork River - Thompson Creek
36	Clear Creek
37	Cold Creek
38	Cottonwood Creek - Little Missouri
39	Cottonwood Creek - South
40	Cow Creek
41	Cow Creek Redbelly Distribution
42	Coyote Creek Redbelly Distribution

Number	Focal Area Name
83	Little Powder River
84	Little Sandy Creek Redbelly Distribution
85	Lodge creek
86	Lost Horse Creek
87	Lower Bighorn
88	Lower Clearwater River
89	Lower Gold Creek
90	Lower Sleeping Child Creek
91	Marshall Creek
92	McDonald Creek Redbelly Distribution
93	Middle Fork Flathead - Wilderness
94	Miners Coulee Redbelly Distribution
95	Mizpah Creek
96	Mount-Truman Creek WCT Cons Pop
97	Mountain Creek
98	Muddy Creek Redbelly Distribution
99	Nemote Creek
100	Ninemile Creek Headwaters
101	North Fork Blackfoot
102	North Fork Burns Creek
103	North Fork Spanish Creek
104	North Fork Sweet Grass
105	O'Keefe Creek
106	Otter Creek
107	Pass Creek
108	Peoples Creek
109	Peterson Creek
110	Pike Creek Redbelly Distribution
111	Pikes-Willow
112	Poplar River
113	Porcupine
114	Prairie Elk
115	Pumpkin Creek
116	Quartz Creek
117	Redwater river
118	Rock Creek - mallard creek
119	Rosebud Creek
120	Rotten Grass
121	Sage Creek
122	Sage Creek Redbelly Distribution
123	Salt Creek Redbelly Distribution
124	Sarpy Creek

Number	Focal Area Name
43	Cramer Creek
44	Crystal Creek
45	Deep Creek
46	Deep/Rock Creek
47	Deer Creek and North Fork Deer Creek
48	Deer Creek Redbelly Distribution
49	Douglas Creek
50	Dry Head
51	Duck Creek
52	Dunkleberg Creek
53	Eagle Creek Redbelly Distribution
54	Fairfield Redbelly Distribution
55	First and Second Creek
56	First Hay Creek
57	Fisher River
58	Flat Creek Redbelly Distribution
59	Fox Creek
60	Gamble Coulee Redbelly Distribution
61	Gilbert Creek
62	Glendive Creek
63	Gold-Belmont Creek
64	Grant Creek
65	Greenough Creek
66	Hay Creek
67	Haymaker - WCT
68	Hogback Creek
69	Hogum Creek
70	Huff Creek Redbelly Distribution
71	Indian Creek Redbelly Distribution
72	Johnson Coulee Redbelly Distribution
73	Judith River Redbelly Distribution
74	Keaster Creek Redbelly Distribution
75	Landers Fork
76	Little Beaver Creek
77	Little box elder and clear creek
78	Little Dry Creek
79	Little Missouri River
80	Little Muddy - Bird Creek
81	Little Porcupine
82	Little Porcupine Creek

Number	Focal Area Name
125	Seventeenmile Creek
126	Sheep Creek Redbelly Distribution
127	Smart Creek - Henderson Creek Complex
128	South Fork Flathead – Wilderness 1
129	South Fork Flathead – Wilderness 2
130	South Fork Flathead – Wilderness 3
131	South Fork Flathead – Wilderness 4
132	South Fork Flathead – Wilderness 5
133	South Lolo Creek
134	St. Regis
135	Stony Creek
136	Sunday Creek
137	Sunnyslope Canal
138	Sweet Grass
139	Tamarack Creek
140	Thirteenmile Creek
141	Threemile Creek - Bitterroot
142	Tin Cup Creek
143	Tin Cup Joe Creek
144	Tobacco River
145	Trail Creek
146	Tyler Creek
147	Tyler Creek Redbelly Distribution
148	Union-Ashby
149	Upper Clarks Fork
150	Upper Lolo Creek
151	Upper OFallon Creek
152	Upper Petty Creek
153	Upper Placid Creek
154	Upper rattlesnake Creek
155	Upper Rye Creek
156	Upper Sevenmile Creek
157	Upper Willow Creek Complex
158	Warm Springs Creek - Bitterroot
159	Welcome Creek
160	Willow Creek - Bitterroot
161	Wyman Creek
162	Yellow Water Creek Redbelly Distribution
163	Yellowstone - YCT

Appendix M: Tier II Terrestrial Focal Areas

Tier II: Moderate conservation need. Resources could be used to implement conservation actions that provide direct benefit to these areas.

Sixty-one Tier II terrestrial focal areas were identified. If you would like more information (e.g., other species, threats, and impacts) on individual focal areas, please contact FWP at mtswap@mt.gov.

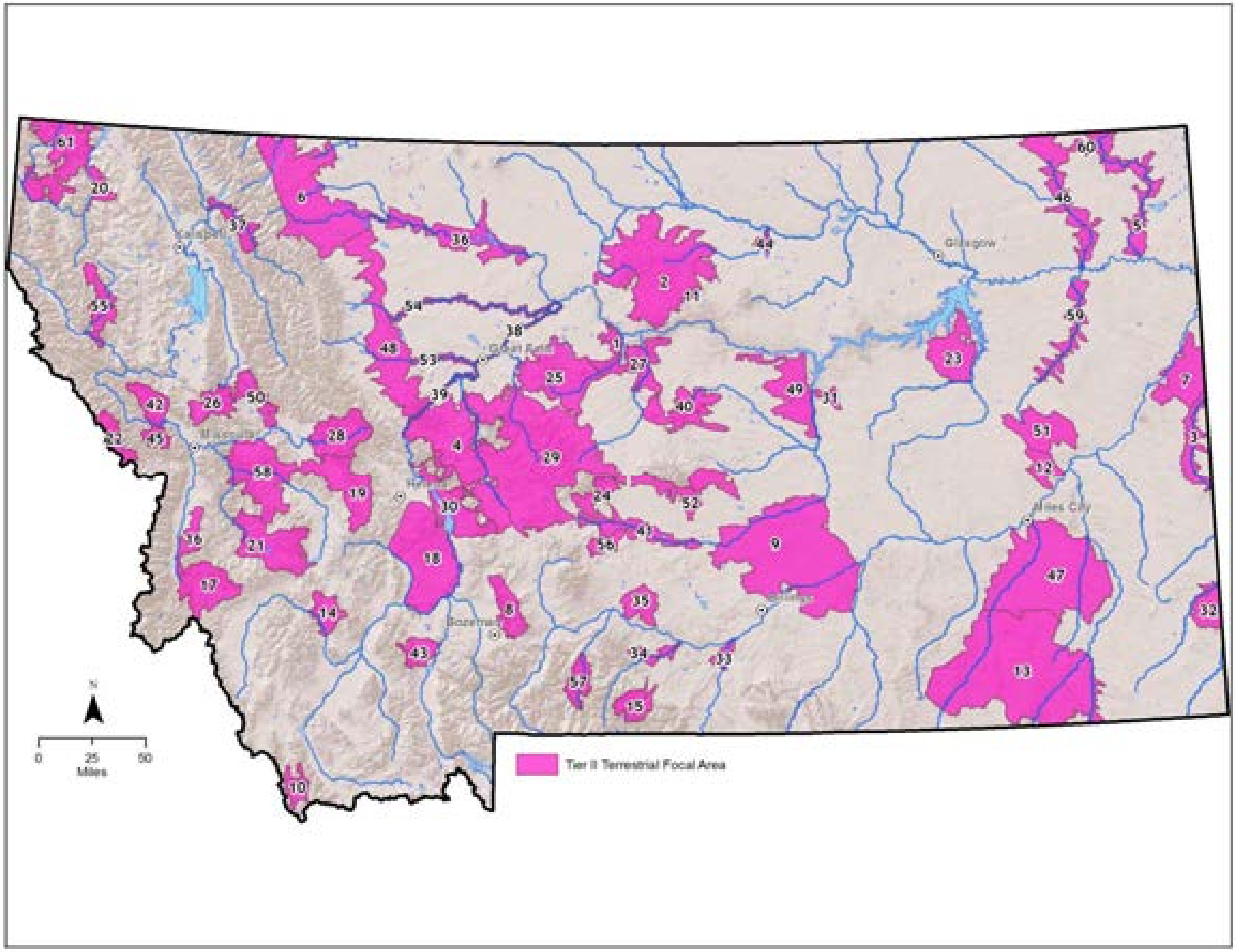

Figure 103. Tier II Terrestrial Focal Areas

Number	Focal Area Name	Number	Focal Area Name
1	Arrow Creek	32	Long Pine
2	Bear's Paw	33	Lower Clarks Fork of the Yellowstone connectivity
3	Beaver Creek (Wibaux Co)	34	Lower Stillwater
4	Big Belts	35	Lower Sweetgrass
5	Big Muddy	36	Marias River and breaks
6	Blackfeet Reservation	37	Middle Fork Flathead River
7	Blue Mountain	38	Missouri below Great Falls
8	Bridgers	39	Missouri River upstream of Great Falls
9	Bull Mountains	40	Mount Judiths and Moccasins
10	Cabin Creek Sagebrush Associates	41	Musselshell River R5T
11	Cow Creek	42	Ninemile
12	Custer Creek	43	Norris Hills
13	Custer national forest	44	People's Creek
14	Divide	45	Petty Creek
15	East and West Rosebud Creek	46	Poplar River
16	East Bitterroot Grasslands	47	Pumpkin Creek
17	East Fork Bitterroot	48	RMF Buffer
18	Elkhorns	49	SAGR Core Tier Two
19	Elliston Area Connectivity	50	Seeley East - Upper Clearwater
20	Fivemile	51	Sheep Mountain
21	Georgetown Lake - Phillipsburg	52	Snowys
22	Great Burn Connectivity	53	Sun River from August to Great Falls
23	Haxby point	54	Teton River from Choteau to Loma
24	Haymaker	55	Thompson
25	Highwoods	56	Two Dot east
26	Jocko	57	Upper Boulder
27	Judith River	58	Upper Clark Fork - Garnets
28	Lincoln Connectivity	59	Upper Redwater River
29	Little Belts	60	Whitetail Creek
30	Little Belts / Canyon Ferry	61	Yaak
31	Lodgepole Creek		

Appendix N: List of all Species of Greatest Conservation Need

Group	Common Name	Scientific Name	State Rank*	Also Species of Greatest Inventory Need
Amphibians	Coeur d'Alene Salamander	*Plethodon idahoensis*	S2	YES
Amphibians	Great Plains Toad	*Anaxyrus cognatus*	S2	
Amphibians	Idaho Giant Salamander	*Dicamptodon aterrimus*	S2	
Amphibians	Northern Leopard Frog	*Lithobates pipiens*	S1,S4	
Amphibians	Western Toad	*Anaxyrus boreas*	S2	
Birds	Black Rosy-Finch	*Leucosticte atrata*	S2	YES
Birds	Black Swift	*Cypseloides niger*	S1B	YES
Birds	Blue-gray Gnatcatcher	*Polioptila caerulea*	S2B	
Birds	Caspian Tern	*Hydroprogne caspia*	S2B	
Birds	Chestnut-collared Longspur	*Calcarius ornatus*	S2B	
Birds	Gray-crowned Rosy-Finch	*Leucosticte tephrocotis*	S2B,S5N	YES
Birds	Greater Sage-Grouse	*Centrocercus urophasianus*	S2	
Birds	Harlequin Duck	*Histrionicus histrionicus*	S2B	YES
Birds	Least Tern	*Sternula antillarum*	S1B	YES
Birds	Lewis's Woodpecker	*Melanerpes lewis*	S2B	
Birds	Mountain Plover	*Charadrius montanus*	S2B	
Birds	Piping Plover	*Charadrius melodus*	S2B	
Birds	Sharp-tailed Grouse	*Tympanuchus phasianellus*	S1,S4	
Birds	Whooping Crane	*Grus americana*	S1M	
Fish	Arctic Grayling	*Thymallus arcticus*	S1	
Fish	Blue Sucker	*Cycleptus elongatus*	S2S3	
Fish	Bull Trout	*Salvelinus confluentus*	S2	
Fish	Columbia River Redband Trout	*Oncorhynchus mykiss gairdneri*	S1	

Group	Common Name	Scientific Name	State Rank*	Also Species of Greatest Inventory Need
Fish	Lake Trout	*Salvelinus namaycush*	S2	
Fish	Paddlefish	*Polyodon spathula*	S2	
Fish	Pallid Sturgeon	*Scaphirhynchus albus*	S1	
Fish	Pearl Dace	*Margariscus margarita*	S2	
Fish	Sauger	*Sander canadensis*	S2	
Fish	Shortnose Gar	*Lepisosteus platostomus*	S1	
Fish	Sicklefin Chub	*Macrhybopsis meeki*	S1	
Fish	Sturgeon Chub	*Macrhybopsis gelida*	S2S3	
Fish	Trout-perch	*Percopsis omiscomaycus*	S2	YES
Fish	Westslope Cutthroat Trout	*Oncorhynchus clarkii lewisi*	S2	
Fish	White Sturgeon	*Acipenser transmontanus*	S1	
Fish	Yellowstone Cutthroat Trout	*Oncorhynchus clarkii bouvieri*	S2	
Mammals	Arctic Shrew	*Sorex arcticus*	S1S3	
Mammals	Bison	*Bos bison*	S2	
Mammals	Black-footed Ferret	*Mustela nigripes*	S1	
Mammals	Dwarf Shrew	*Sorex nanus*	S2S3	
Mammals	Grizzly Bear	*Ursus arctos*	S2S3	
Mammals	Northern Bog Lemming	*Synaptomys borealis*	S2	YES
Mammals	Northern Short-tailed Shrew	*Blarina brevicauda*	S1S3	
Mammals	White-tailed Prairie Dog	*Cynomys leucurus*	S1	
Mussels	Western Pearlshell	*Margaritifera falcata*	S2	
Reptiles	Milksnake	*Lampropeltis triangulum*	S2	
Reptiles	Smooth Greensnake	*Opheodrys vernalis*	S2	YES

Group	Common Name	Scientific Name	State Rank*	Also Species of Greatest Inventory Need
Reptiles	Western Hog-nosed Snake	*Heterodon nasicus*	S2	YES
Amphibians	Plains Spadefoot	*Spea bombifrons*	S3	
Birds	Alder Flycatcher	*Empidonax alnorum*	S3B	
Birds	American Bittern	*Botaurus lentiginosus*	S3B	
Birds	American White Pelican	*Pelecanus erythrorhynchos*	S3B	
Birds	Baird's Sparrow	*Ammodramus bairdii*	S3B	
Birds	Black Tern	*Chlidonias niger*	S3B	
Birds	Black-backed Woodpecker	*Picoides arcticus*	S3	
Birds	Black-billed Cuckoo	*Coccyzus erythropthalmus*	S3B	YES
Birds	Black-crowned Night-Heron	*Nycticorax nycticorax*	S3B	
Birds	Black-necked Stilt	*Himantopus mexicanus*	S3B	
Birds	Bobolink	*Dolichonyx oryzivorus*	S3B	
Birds	Boreal Chickadee	*Poecile hudsonicus*	S3	
Birds	Brewer's Sparrow	*Spizella breweri*	S3B	
Birds	Brown Creeper	*Certhia americana*	S3	
Birds	Burrowing Owl	*Athene cunicularia*	S3B	
Birds	Cassin's Finch	*Haemorhous cassinii*	S3	
Birds	Clark's Grebe	*Aechmophorus clarkii*	S3B	
Birds	Clark's Nutcracker	*Nucifraga columbiana*	S3	
Birds	Common Loon	*Gavia immer*	S3B	
Birds	Common Tern	*Sterna hirundo*	S3B	
Birds	Evening Grosbeak	*Coccothraustes vespertinus*	S3	
Birds	Ferruginous Hawk	*Buteo regalis*	S3B	
Birds	Flammulated Owl	*Otus flammeolus*	S3B	
Birds	Forster's Tern	*Sterna forsteri*	S3B	
Birds	Franklin's Gull	*Leucophaeus pipixcan*	S3B	
Birds	Golden Eagle	*Aquila chrysaetos*	S3	

Group	Common Name	Scientific Name	State Rank*	Also Species of Greatest Inventory Need
Birds	Great Blue Heron	*Ardea herodias*	S3	
Birds	Great Gray Owl	*Strix nebulosa*	S3	YES
Birds	Green-tailed Towhee	*Pipilo chlorurus*	S3B	
Birds	Horned Grebe	*Podiceps auritus*	S3B	
Birds	Le Conte's Sparrow	*Ammodramus leconteii*	S3B	
Birds	Loggerhead Shrike	*Lanius ludovicianus*	S3B	
Birds	Long-billed Curlew	*Numenius americanus*	S3B	
Birds	McCown's Longspur	*Rhynchophanes mccownii*	S3B	
Birds	Nelson's Sparrow	*Ammodramus nelsoni*	S3B	
Birds	Northern Goshawk	*Accipiter gentilis*	S3	YES
Birds	Northern Hawk Owl	*Surnia ulula*	S3	
Birds	Pacific Wren	*Troglodytes pacificus*	S3	
Birds	Peregrine Falcon	*Falco peregrinus*	S3	
Birds	Pileated Woodpecker	*Dryocopus pileatus*	S3	
Birds	Pinyon Jay	*Gymnorhinus cyanocephalus*	S3	
Birds	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S3B	
Birds	Sage Sparrow	*Artemisiospiza belli*	S3B	YES
Birds	Sage Thrasher	*Oreoscoptes montanus*	S3B	
Birds	Sedge Wren	*Cistothorus platensis*	S3B	
Birds	Sprague's Pipit	*Anthus spragueii*	S3B	
Birds	Trumpeter Swan	*Cygnus buccinator*	S3	
Birds	Varied Thrush	*Ixoreus naevius*	S3B	
Birds	Veery	*Catharus fuscescens*	S3B	
Birds	White-faced Ibis	*Plegadis chihi*	S3B	
Birds	White-tailed Ptarmigan	*Lagopus leucura*	S3	YES
Birds	Yellow Rail	*Coturnicops noveboracensis*	S3B	
Birds	Yellow-billed Cuckoo	*Coccyzus americanus*	S3B	YES

Group	Common Name	Scientific Name	State Rank*	Also Species of Greatest Inventory Need
Fish	Deepwater Sculpin	*Myoxocephalus thompsonii*	S3	YES
Fish	Iowa Darter	*Etheostoma exile*	S3	
Fish	Northern Redbelly Dace	*Chrosomus eos*	S3	
Fish	Northern Redbelly X Finescale Dace	*Chrosomus eos x chrosomus neogaeus*	S3	
Fish	Pygmy Whitefish	*Prosopium coulteri*	S3	YES
Fish	Spoonhead Sculpin	*Cottus ricei*	S3	
Fish	Torrent Sculpin	*Cottus rhotheus*	S3	
Mammals	Black-tailed Prairie Dog	*Cynomys ludovicianus*	S3	
Mammals	Canada Lynx	*Lynx canadensis*	S3	
Mammals	Fisher	*Martes pennanti*	S3	
Mammals	Fringed Myotis	*Myotis thysanodes*	S3	
Mammals	Great Basin Pocket Mouse	*Perognathus parvus*	S3	YES
Mammals	Hoary Bat	*Lasiurus cinereus*	S3	
Mammals	Merriam's Shrew	*Sorex merriami*	S3	
Mammals	Pallid Bat	*Antrozous pallidus*	S3	
Mammals	Preble's Shrew	*Sorex preblei*	S3	
Mammals	Pygmy Rabbit	*Brachylagus idahoensis*	S3	
Mammals	Pygmy Shrew	*Sorex hoyi*	S3	
Mammals	Spotted Bat	*Euderma maculatum*	S3	YES
Mammals	Swift Fox	*Vulpes velox*	S3	
Mammals	Townsend's Big-eared Bat	*Corynorhinus townsendii*	S3	
Mammals	Wolverine	*Gulo gulo*	S3	
Reptiles	Greater Short-horned Lizard	*Phrynosoma hernandesi*	S3	YES
Reptiles	Northern Alligator Lizard	*Elgaria coerulea*	S3	YES
Reptiles	Snapping Turtle	*Chelydra serpentina*	S3	YES

Group	Common Name	Scientific Name	State Rank*	Also Species of Greatest Inventory Need
Reptiles	Spiny Softshell	*Apalone spinifera*	S3	
Reptiles	Western Skink	*Plestiodon skiltonianus*	S3	YES

*Species with a State Rank of S1 or S2 are the primary focus of the SWAP.

Appendix O: List of Invertebrate Species of Concern

Subgroup	Common Name	Scientific Name
Arachnids	A Cave Obligate Harvestman	*Cryptobunus cavicolus*
Beetles	Brown's Microcylloepus Riffle Beetle	*Microcylloepus browni*
Beetles	Saint Anthony Dune Tiger Beetle	*Cicindela arenicola*
Beetles	Warm Spring Zaitzevian Riffle Beetle	*Zaitzevia thermae*
Butterflies	Alberta Fritillary	*Boloria alberta*
Butterflies	Frigga Fritillary	*Boloria frigga*
Butterflies	Gillette's Checkerspot	*Euphydryas gillettii*
Butterflies	Gray Comma	*Polygonia progne*
Butterflies	Ottoe Skipper	*Hesperia ottoe*
Caddisflies	A Rhyacophilan Caddisfly	*Rhyacophila ebria*
Caddisflies	A Rhyacophilan Caddisfly	*Rhyacophila gemona*
Caddisflies	A Rhyacophilan Caddisfly	*Rhyacophila glaciera*
Caddisflies	A Rhyacophilan Caddisfly	*Rhyacophila newelli*
Caddisflies	A Rhyacophilan Caddisfly	*Rhyacophila potteri*
Caddisflies	A Rhyacophilan Caddisfly	*Rhyacophila rickeri*
Caddisflies	Alexander's Rhyacophilan Caddisfly	*Rhyacophila alexanderi*
Caddisflies	Northern Rocky Mountains Refugium Caddisfly	*Goereilla baumanni*
Caddisflies	Northern Rocky Mountains Refugium Caddisfly	*Rossiana montana*
Crustaceans	A Cave Obligate Isopod	*Salmasellus steganothrix*
Crustaceans	A Subterranean Amphipod	*Stygobromus montanensis*
Crustaceans	A Subterranean Amphipod	*Stygobromus obscurus*
Crustaceans	A Subterranean Amphipod	*Stygobromus puteanus*
Crustaceans	A Subterranean Amphipod	*Stygobromus tritus*
Crustaceans	Glacier Amphipod	*Stygobromus glacialis*
Damselflies	Subarctic Bluet	*Coenagrion interrogatum*
Dragonflies	Boreal Whiteface	*Leucorrhinia borealis*
Dragonflies	Brimstone Clubtail	*Stylurus intricatus*
Dragonflies	Brush-tipped Emerald	*Somatochlora walshii*
Dragonflies	Eastern Ringtail	*Erpetogomphus designatus*
Dragonflies	Subarctic Darner	*Aeshna subarctica*
Dragonflies	Western Pondhawk	*Erythemis collocata*
Freshwater Sponges	A Freshwater Sponge	*Ephydatia cooperensis*
Mayflies	A Mayfly	*Caenis youngi*

Subgroup	Common Name	Scientific Name
Mayflies	A Mayfly	*Parameletus columbiae*
Mayflies	A Mayfly	*Raptoheptagenia cruentata*
Mayflies	A Sand-dwelling Mayfly	*Anepeorus rusticus*
Mayflies	A Sand-dwelling Mayfly	*Homoeoneuria alleni*
Mayflies	A Sand-dwelling Mayfly	*Lachlania saskatchewanensis*
Mayflies	A Sand-dwelling Mayfly	*Macdunnoa nipawinia*
Mayflies	Lolo Mayfly	*Caurinella idahoensis*
Millipedes	A Millipede	*Adrityla cucullata*
Millipedes	A Millipede	*Austrotyla montani*
Millipedes	A Millipede	*Corypus cochlearis*
Millipedes	A Millipede	*Endopus parvipes*
Millipedes	A Millipede	*Lophomus laxus*
Millipedes	A Millipede	*Orophe cabinetus*
Millipedes	A Millipede	*Orthogmus oculatus*
Millipedes	A Millipede	*Taiyutyla curvata*
Mollusks	A Spring Snail	*Pyrgulopsis bedfordensis*
Mollusks	Alpine Mountainsnail	*Oreohelix alpina*
Mollusks	Berry's Mountainsnail	*Oreohelix strigosa berryi*
Mollusks	Bitterroot Mountainsnail	*Oreohelix amariradix*
Mollusks	Carinate Mountainsnail	*Oreohelix elrodi*
Mollusks	Gallatin Mountainsnail	*Oreohelix yavapai mariae*
Mollusks	Humped Coin	*Polygyrella polygyrella*
Mollusks	Keeled Mountainsnail	*Oreohelix carinifera*
Mollusks	Lake Disc	*Discus brunsoni*
Mollusks	Large-mantle Physa	*Physa megalochlamys*
Mollusks	Lyrate Mountainsnail	*Oreohelix haydeni*
Mollusks	Lyre Mantleslug	*Udosarx lyrata*
Mollusks	Magnum Mantleslug	*Magnipelta mycophaga*
Mollusks	Marbled Jumping-slug	*Hemphillia danielsi*
Mollusks	Pale Jumping-slug	*Hemphillia camelus*
Mollusks	Pygmy Mountainsnail	*Oreohelix pygmaea*
Mollusks	Pygmy Slug	*Kootenaia burkei*
Mollusks	Reticulate Taildropper	*Prophysaon andersoni*
Mollusks	Robust Lancetooth	*Haplotrema vancouverense*
Mollusks	Rocky Mountain Capshell	*Acroloxus coloradensis*

Subgroup	Common Name	Scientific Name
Mollusks	Rocky Mountain Duskysnail	*Colligyrus greggi*
Mollusks	Sheathed Slug	*Zacoleus idahoensis*
Mollusks	Shiny Tightcoil	*Pristiloma wascoense*
Mollusks	Shortface Lanx	*Fisherola nuttalli*
Mollusks	Smoky Taildropper	*Prophysaon humile*
Mollusks	Striate Disc	*Discus shimekii*
Mollusks	Western Pearlshell	*Margaritifera falcata*
Springtails	A Springtail	*Oncopodura cruciata*
Stoneflies	Alberta Snowfly	*Isocapnia integra*
Stoneflies	Clearwater Roachfly	*Soliperla salish*
Stoneflies	Columbian Snowfly	*Utacapnia columbiana*
Stoneflies	Cordilleran Forestfly	*Zapada cordillera*
Stoneflies	Hooked Snowfly	*Isocapnia crinita*
Stoneflies	Meltwater Lednian Stonefly	*Lednia tumana*
Stoneflies	Northern Rocky Mountains Refugium Stonefly	*Soyedina potteri*
Stoneflies	Springs Stripetail	*Isoperla petersoni*
Stoneflies	Western Glacier Stonefly	*Zapada glacier*